INTRODUCTION

How to Use This Manual

This supplement contains information for the 94 CIVIC.
Refer to following shop manuals for service procedures and data not included in this supplement.

Description	Code No.
CIVIC MAINTENANCE, REPAIR and CONSTRUCTION 92 VOL.1 and VOL.2 CIVIC SUPPLEMENT 93	62SR300A 62SR300B 62SR320

The first page of each section is marked with a black tab that lines up with one of the thumb index tabs on this page. You can quickly find the first page of each section without looking through a full table of contents. The symbols printed at the top corner of each page can also be used as a quick reference system.

Special Information

⚠ WARNING Indicates a strong possibility of severe personal injury or loss of life if instructions are not followed.

CAUTION: Indicates a possibility of personal injury or equipment damage if instructions are not followed.

NOTE: Gives helpful information.

CAUTION: Detailed descriptions of *standard workshop* procedures, safety principles and service operations are not included. Please note that this manual contains warnings and cautions against some specific service methods which could cause PERSONAL INJURY, damage a vehicle or make it unsafe. Please understand that these warnings cannot cover all conceivable ways in which service, whether or not recommended by HONDA might be done, or of the possible hazardous consequences of every conceivable way, nor could HONDA investigate all such ways. Anyone using service procedures or tools, whether or not recommended by HONDA, *must satisfy himself thoroughly* that neither personal safety nor vehicle safety will be jeopardized.

All information contained in this manual is based on the latest product information available at the time of printing. We reserve the right to make changes at any time without notice. No part of this publication may be reproduced, stored in retrieval system, or transmitted, in any form by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher. This includes text, figures and tables.

First Edition 8/93 380 pages
All Rights Reserved

HONDA MOTOR CO.,LTD.
Service Publication Office

[redacted] marked sections are not included in this manual.
As sections with * include SRS components; special precautions are required when servicing.

*General Info
Special Tools
Specifications
Maintenance
Engine
[redacted]
Fuel and Emissions
Transaxle
[redacted]
[redacted]
Brakes (Including ABS)
*Body
*Heater and Air Conditioning
*Electrical (Including SRS)

Outline of Model Changes

ITEM	DESCRIPTION	93 MODEL	94 MODEL	REFERENCE SECTION
Engine	Modified • Rocker shaft collar for D15Z1 engine	○		—
	Adopted • D15Z2, D15B7 and D16Y1 engines for KQ model • D15B7 and D16Z9 engines for KB model Changed • Torque value of mount and bracket bolts and nuts • Recommended engine oil		○	5,8,9
PGM-CARB.	Changed • Wire harness color • Fuel feed pipe, fuel return pipe and fuel vapor pipe materials for 4WD (Except Europe) model	○		—
	Adopted • D15Z2 engine for KQ model		○	11
PGM-FI	Changed • Wire harness color • Fuel feed pipe, fuel return pipe and fuel vapor pipe materials for 4WD (Except Europe) model Out of use • Fuel-sub pump for 4WD model Added • Jet pump for 4WD model	○		—
	Added • D15B7 and D16Y1 engines for KQ model • D15B7 and D16Z9 engines for KB model Modified • Electronic Control Unit (ECU) • Throttle body for B16A2 engine Changed • Main wire harness • Main wire harness for B16A2 engine • Fuel pressure for D15B2 engine • Throttle body		○	11
Clutch	Changed • Torque value of clutch pipe for LHD model • Recommended grease	○		—
Manual Transmis-sion	Changed • Recommended grease • Method of shift fork spring pin installing	○		—
	Modified • Transmission mount, right front mount/bracket and rear mount/bracket Changed • Torque value of transmission mounting bolts • Torque value of transmission mount bolt for S20 and Y21 manual transmissions • Transmission breather cap for S20 manual transmission • Shift fork for Y21 manual transmission • Super-low shaft, 2-4 select lever and transfer shaft for S22 manual transmission		○	13

ITEM	DESCRIPTION	93 MODEL	94 MODEL	REFERENCE SECTION
Automatic Transmission	Modified • Hydraulic circuit • Secondary valve body • Reverse idler gear Changed • Drain plug • Throttle pressure and governor pressure • Reverse selector hub on the countershaft	○		—
	Modified • Hydraulic circuit Changed • Parking gear • Reverse idler gear shaft and holder • Oil guide cap of the sub-shaft • Secondary valve body • Servo body • Countershaft • Clutch assemblies Abolished • 4WD disengagement mechanism		○	14
Rear Differential	Changed • Rear differential assembly		○	15
Driveshafts	Changed • Rear driveshaft and propeller shaft for 4WD model		○	16
Brake	Modified • Wire colors between solenoids and ABS control unit	○		—
	Modified • ABS for 4WD model		○	19
Body	Changed • Fastener and spacer for rear window • Limit switch position of sunroof motor unit Added • Some version emblems • Rear seat access cable Abolished • Shim for sunroof panel/glass height adjustment		○	20
Air Conditioning	Adopted • New refrigerant HFC-134a (R-134a)		○	22
Electrical	Changed • Wire color of ignition switch • Data link connector • Alternator brushes (Mitsuba type) • Terminal number of shift lock solenoid Modified • Power supply circuit	○		—
	Changed • Ignition system for KQ model • Integrated Control Unit for KQ and KB models • Seat heater for some KS model Added • Supplemental Restraint System (SRS) type III		○	23

General Information

Chassis and Engine Numbers 1-2
Identification Number Locations 1-7
Warning/Caution Label Locations 1-8
Lift and Support Points
  Lift 1-16
  Floor Jack 1-17
  Safety Stands 1-18
Towing 1-19
Service Precautions (4WD) 1-20

Chassis and Engine Numbers

European Model (2-door Hatchback)

Vehicle Identification Number

JHMEG33200S200001

Manufacturer, Make and Type of Vehicle
- JHM: HONDA MOTOR CO., LTD. JAPAN HONDA Passenger car

Line, Body and Engine Type
- EG3: CIVIC 3-door/D13B2
- EG4: CIVIC 3-door/D15B2, D15Z1
- EG5: CIVIC 3-door/D16Z6
- *EG6: CIVIC 3-door/B16A2*

Body Type and Transmission Type
- 3: 2-door Hatchback 5-speed Manual
- 4: 2-door Hatchback 4-speed Automatic

Vehicle Grade (Series)
- 2: DX (EG3: KG/KF/KS/KE)
- 3: EX (EG3: KG/KF)
- 4: DXi (EG4: KG/KS)
- 5: LSi (EG4: KG/KF/KS/KE/KW)
- 6: VEi (EG4: KG/KF/KS/KE)
- 8: ESi (EG5: KG/KF/KS/KE)
- 9: VTi (EG6: KG/KF/KS/KE/KW)

Fixed Code

Auxiliary Number

Factory Code
- S: Suzuka Factory in Japan

Model Year
- 2: 1994

Serial Number

Engine Number

B16A2-1200001

Engine Type
- B16A2: 1600 DOHC 16-valves Sequential Multiport Fuel-injected VTEC Engine with CATA
- D13B2: 1300 SOHC 16-valves 1-carbureded Engine with CATA
- D15B2: 1500 SOHC 16-valves Dual-point Fuel-injected Engine with CATA
- D15Z1: 1500 SOHC 16-valves Sequential Multiport Fuel-injected VTEC-E Engine with CATA
- D16Z6: 1600 SOHC 16-valves Sequential Multiport Fuel-injected VTEC Engine with CATA

Serial Number
- B16A2: 1200001~
- D13B2: 2200001~
- D15B2: 6900001~
- D15Z1, D16Z6: 3700001~

Manual Transmission Number

S20-1000001

Transmission Type
- S20: Except B16A2 engine
- Y21: For B16A2 engine

Serial Number

Automatic Transmission Number

M24A-3000001

Transmission Type

Serial Number

European Model (4-door Sedan)

Vehicle Identification Number

JHMEG85400S200001

Manufacturer, Make and Type of Vehicle
- JHM: HONDA MOTOR CO., LTD. JAPAN HONDA Passenger car

Line, Body and Engine Type
- EG8: CIVIC 4-door/D15B2, D15Z1
- EG9: CIVIC 4-door/B16A2
- EH1: CIVIC 4-door 4WD/D16Z7
- EH9: CIVIC 4-door/D16A7, D16Z6, D16Z7

Body Type and Transmission Type
- 5: 4-door Sedan 5-speed Manual
- 6: 4-door Sedan 4-speed Automatic

Vehicle Grade (Series)
- 4: DXi (EG8: KG/KS) EX (EH9: KR)
- 5: LSi (EG8: KG/KF/KS/KE/KW)
- 6: VEi (EG8: KG/KF/KS/KE)
- 8: ESi (EH9: KG/KF/KS/KE/KU) RTSi (EH1: KG)
- 9: VTi (EG9: KG/KF/KS/KE/KW)

Fixed Code

Auxiliary Number

Factory Code
- S: Suzuka Factory in Japan

Model Year
- 2: 1994

Serial Number

Engine Number

B16A2-1200001

Engine Type
- B16A2: 1600 DOHC 16-valves Sequential Multiport Fuel-injected VTEC Engine with CATA
- D15B2: 1500 SOHC 16-valves Dual-point Fuel-injected Engine with CATA
- D15Z1: 1500 SOHC 16-valves Sequential Multiport Fuel-injected VTEC-E Engine with CATA
- D16A7: 1600 SOHC 16-valves Sequential Multiport Fuel-injected Engine without CATA
- D16Z6: 1600 SOHC 16-valves Sequential Multiport Fuel-injected VTEC Engine with CATA
- D16Z7: 1600 SOHC 16-valves Sequential Multiport Fuel-injected VTEC Engine with CATA for Germany and 4WD

Serial Number
- B16A2: 1200001~
- D15B2: 6900001~
- D15Z1, D16Z6: 3700001~
- D16A7: 5200001~
- D16Z7 for Germany: 1400001~
- D16Z7 for 4WD: 1500001~

Manual Transmission Number

S20-1000001

Transmission Type
- S20: Except B16A2 engine and 4WD model
- Y21: For B16A2 engine
- S22: For 4WD model

Serial Number

Automatic Transmission Number

M24A-3000001

Transmission Type
- M24A: For 2WD model
- M25A: For 4WD model

Serial Number

Chassis and Engine Numbers

Except European Model (2-door Hatchback)

Vehicle Identification Number

JHMEG33100S200001

Manufacturer, Make and Type of Vehicle
- JHM: HONDA MOTOR CO., LTD. JAPAN HONDA Passenger car

Line, Body and Engine Type
- EG3: CIVIC 3-door/D13B3
- EG4: CIVIC 3-door/D15B3, D15B7, D15Z2
- EG5: CIVIC 3-door/D16A9, D16Y1

Body Type and Transmission Type
- 3: 2-door Hatchback 5-speed Manual
- 4: 2-door Hatchback 4-speed Automatic

Vehicle Grade (Series)
- 1: EL (EG3: KT) CX (EG4: KQ), 1.5EL (EG4: KY)
- 2: EX (EG4: KP/KT/KY)
- 4: GLi (EG4: KQ)
- 8: VTi (EG5: KQ)
- 9: Si (EG5: KP/KT)

Fixed Code

Auxiliary Number

Factory Code
- S: Suzuka Factory in Japan

Model Year
- 2: 1994

Serial Number

Engine Number

D13B3-2200001

Engine Type
- D13B3: 1300 SOHC 16-valves 1-carbureded Engine without CATA
- D15B3: 1500 SOHC 16-valves 1-carbureded Engine without CATA
- D15B7: 1500 SOHC 16-valves Dual-point Fuel-injected Engine with CATA
- D15Z2: 1500 SOHC 16-valves 1-carbureded Engine with CATA
- D16A9: 1600 DOHC 16-valves Sequential Multiport Fuel-injected Engine without CATA
- D16Y1: 1600 SOHC 16-valves Sequential Multiport Fuel-injected VTEC Engine with CATA

Serial Number
- D13B3, D15B3, D16A9: 2200001 ~
- D15B7: 3700001 ~
- D15Z2, D16Y1: 1000001 ~

Manual Transmission Number

S20-1000001

Transmission Type

Serial Number

Automatic Transmission Number

M24A-3000001

Transmission Type
- M24A: For D16Y1 engine
- M48A: Except D16Y1 engine

Serial Number

European Model (4-door Sedan)

Vehicle Identification Number

JHMEH85100S200001

Manufacturer, Make and Type of Vehicle
- JHM: HONDA MOTOR CO., LTD. JAPAN HONDA Passenger car

Line, Body and Engine Type
- EG7: CIVIC 4-door/D13B3
- EG8: CIVIC 4-door/D15B3, D15B7, D15Z1
- EH8: CIVIC 4-door/D12B1
- EH9: CIVIC 4-door/D16A9, D16Y1

Body Type and Transmission Type
- 5: 4-door Sedan 5-speed Manual
- 6: 4-door Sedan 4-speed Automatic

Vehicle Grade (Series)
- 1: 1.2EL (EH8: KT), EL (EG7: KP) 1.5EL: (EG8: KP/KT/KY)
- 2: 1.2EX (EH8: KU) EX (EG8: KP/KT/KY)
- 4: GLi (EG8: KQ)
- 7: VEi (EG8: KQ) Si (EH9: KP/KT/KY)
- 9: VTi (EH9: KQ)

Fixed Code

Auxiliary Number

Factory Code
- S: Suzuka Factory in Japan

Model Year
- 2: 1994

Serial Number

Engine Number

D12B1-2200001

Engine Type
- D12B1: 1200 SOHC 16-valves 1-carbureded Engine without CATA
- D13B3: 1300 SOHC 16-valves 1-carbureded Engine without CATA
- D15B3: 1500 SOHC 16-valves 1-carbureded Engine without CATA
- D15B7: 1500 SOHC 16-valves Dual-point Fuel-injected Engine with CATA
- D15Z1: 1500 SOHC 16-valves Sequential Multiport Fuel-injected VTEC-E Engine with CATA
- D16A9: 1600 DOHC 16-valves Sequential Multiport Fuel-injected Engine without CATA
- D16Y1: 1600 SOHC 16-valves Sequential Multiport Fuel-injected VTEC Engine with CATA

Serial Number
- D12B1, D13B3, D15B3, D16A9: 2200001~
- D15B7, D15Z1: 3700001~
- D16Y1: 1000001~

Manual Transmission Number

S20-1000001

Transmission Type

Serial Number

Automatic Transmission Number

M24A-3000001

Transmission Type
- M24A: Except D12B1, D15B3, D16A9 engine
- M48A: D12B1, D15B3, D16A9 engine

Serial Number

Chassis and Engine Numbers

Except European Model (4-door Sedan, KB)

Vehicle Identification Number

1HGEH454*RL700001

Manufacturer, Make and Type of Vehicle
- 1HG: HONDA OF AMERICA MFG., INC. U.S.A. HONDA Passenger car

Line, Body and Engine Type
- EH4: CIVIC 4-door/D15B7
- EH5: CIVIC 4-door/D16Z9

Body Type and Transmission Type
- 5: 4-door Sedan 5-speed Manual
- 6: 4-door Sedan 4-speed Automatic

Vehicle Grade (Series)
- 4: DX, EX
- 5: EX with ABS

Check Digit

Model Year
- R: 1994

Factory Code
- S: Ohio Factory in U.S.A. (East Liberty)

Serial Number

Engine Number

D15B7-3850001

Engine Type
- D15B7: 1500 SOHC 16-valves Dual-point Fuel-injected Engine with CATA
- D16Z9: 1600 SOHC 16-valves Sequential Multiport Fuel-injected VTEC Engine with CATA

Serial Number
- D15B7: 3850001 ~
- D16Z9: 1000001 ~

Manual Transmission Number

S20-1000001

Transmission Type

Serial Number

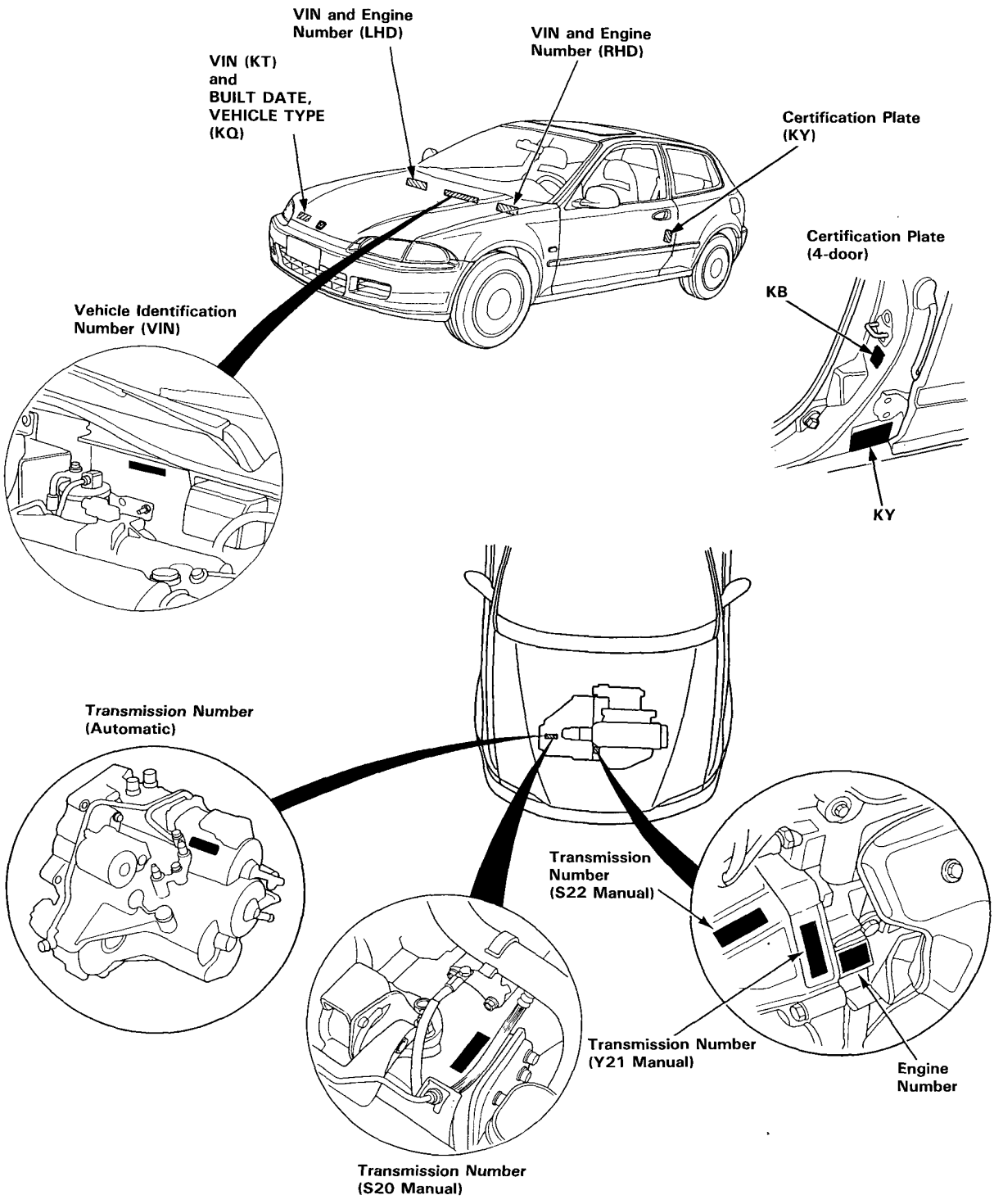
Automatic Transmission Number

M24A-3000001

Transmission Type

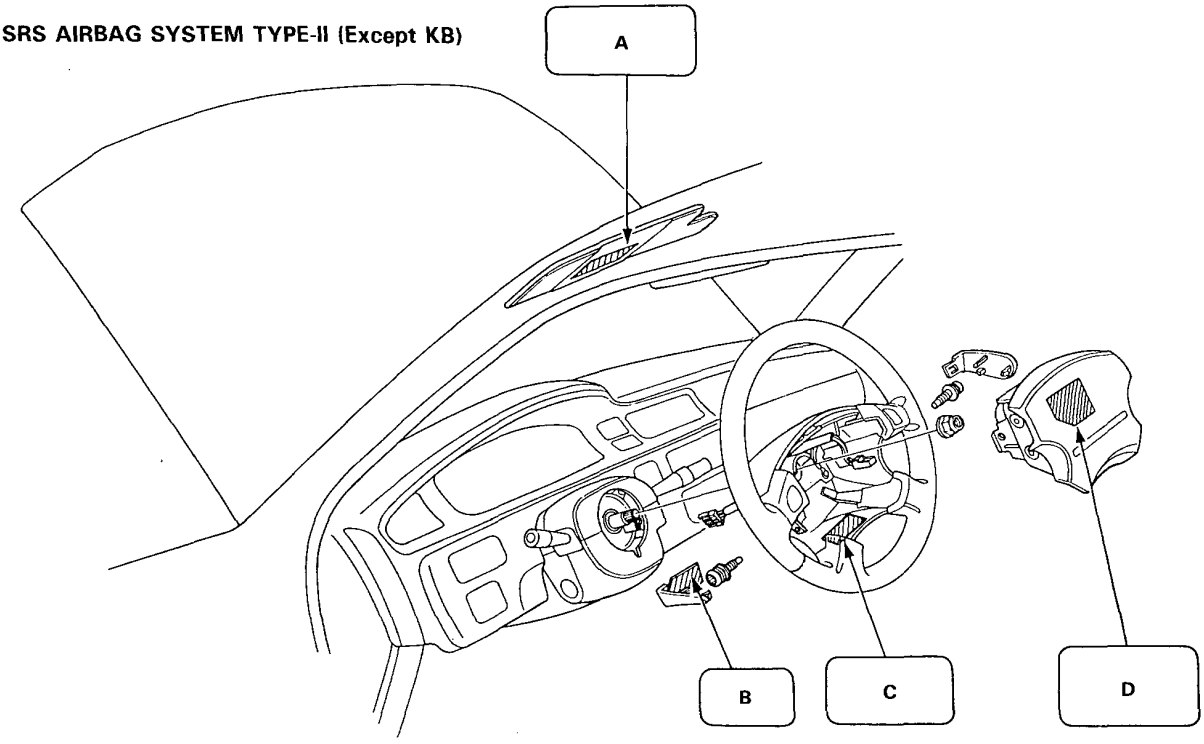
Serial Number

Identification Number Locations



Warning/Caution Label Locations

SRS AIRBAG SYSTEM TYPE-II (Except KB)



A: DRIVER INFORMATION (SUNVISOR) European models

SRS ALWAYS WEAR YOUR SEAT BELT
- THIS CAR IS EQUIPPED WITH A DRIVER AIRBAG AS A SUPPLEMENTAL RESTRAINT SYSTEM (S.R.S.).
- IT IS DESIGNED TO SUPPLEMENT THE SEAT BELT.
- IF YOUR SRS INDICATOR LIGHTS WHILE DRIVING, SEE YOUR AUTHORIZED HONDA DEALER.

SRS ATTACHEZ TOUJOURS VOTRE CEINTURE
- CE VEHICULE EST EQUIPE D'UN COUSSIN D'AIR POUR LE CONDUCTEUR QUI CONSTITUE UN SYSTEME DE RETENUE COMPLEMENTAIRE (S.R.S.).
- CE COUSSIN D'AIR COMPLETE LA FONCTION DE LA CEINTURE DE SECURITE.
- SI LE TEMOIN SRS S'ALLUME PENDANT LA CONDUITE, ADRESSEZ-VOUS A VOTRE CONCESSIONNAIRE HONDA OFFICIEL.

SRS SICHERHEITSGURTE BEI JEDER FAHRT ANLEGEN
- DIESES FAHRZEUG BESITZT EINEN FAHRER-AIRBAG ALS ZUSÄTZLICHES RÜCKHALTESYSTEM (S.R.S.).
- ES IST EINE ERGÄNZUNG ZUM SICHERHEITSGURT.
- WENN DIE SRS-KONTROLLEUCHTE WAHREND DER FAHRT AUFLEUCHTET, UMGEHEND FINEN HONDA HÄNDLER AUFSUCHEN.

SRS DRAAG ALTIJD UW VEILIGHEIDSGORDEL
- DIT VOERTUIG IS UITGERUST MET EEN LUCHTKUSSEN AAN DE BESTUURDERSKANT ALTS EXTRA BESCHERMING (S.R.S.).
- DIT IS ONTWORPEN ALS EXTRA BESCHERMING BIJ DE VEILIGHEIDSGORDEL.
- ALS HEL SRS-WAARSCHUWINGSLAMPJE GAAT BRANDEN ONDER HET RIJDEN. NEEM DAN KONTAKT OP MET EEN HONDA DEALER.

A: DRIVER INFORMATION (SUNVISOR) Except European models

SRS ALWAYS WEAR YOUR SEAT BELT
- THIS CAR IS EQUIPPED WITH A DRIVER AIRBAG AS A SUPPLEMENTAL RESTRAINT SYSTEM (SRS).
- IT IS DESIGNED TO SUPPLEMENT THE SEAT BELT.
- IF YOUR SRS INDICATOR LIGHTS WHILE DRIVING SEE YOUR AUTHORIZED HONDA DEALER.

B: MAINTENANCE LID CAUTION

注意 SRS
ＳＲＳメインテナンスは、イグニッション スイッチを切ってから行うこと。

CAUTION
BEFORE MAINTENANCE, SWITCH OFF THE IGNITION.

ATTENTION
AVANT TOUT ENTRETIEN, COUPER LE CONTACT.

ACHTUNG
VOR WARTUNG ZÜNDUNG AUSSCHALTEN.

LET OP
ZET HET KONTAKTSLOT AF ALVORENS MET HET ONDERHOUD TE BEGINNEN.

C: MONITOR NOTICE

NOTICE SRS
- REFER TO SERVICE MANUAL FOR DETAILED INSTRUCTIONS.

REMARQUE
- POUR LES INSTRUCTIONS DETAILL'EES, SE REPORTER AU MANUEL DE REPARATIONS.

LET UP!
- RAADPLEEG HET WERKPLAATSHANDBOEK VOOR NADERE AANWIJZINGEN.

ACHTUNG
- AUSFÜHRLICHE ANWEISUNGEN SIND DEM WERKSTATTHANDBUCH ZU ENTNEHMEN.

D: BODY COVER CAUTION

注意 CAUTION ACHTUNG SRS
- ＳＲＳメンテナンス時はサービス マニュアルを参照すること。
- REFER TO THE SHOP MANUAL.
- SE REPORTER AU MANUEL D'ATELIER.
- WERKSTATTHANDBUCH LESEN.
- LEES HET WEKPIAATSHANDBOEK.

E: SRS WARNING (HOOD) LHD model

WARNING SRS

THIS VEHICLE IS EQUIPPED WITH A DRIVER AS A SUPPLEMENTAL RESTRAINT SYSTEM. (SRS)
ALL SRS ELECTRICAL WIRING AND CONNECTORS ARE COLORED YELLOW. DO NOT USE ELECTRICAL TEST EQUIPMENT ON THESE CIRCUITS. TAMPERING WITH OR DISCONNECTING THE SRS WIRING COULD RESULT IN ACCIDENTAL FIRING OF THE INFLATOR OR MAKE THE SYSTEM INOPERATIVE, WHICH MAY RESULT IN SERIOUS INJURY.

ATTENTION SRS

CE VEHICULE EST EQUIPE D'UN COUSSIN D'AIR DU COTE CONDUCTEUR QUI CONSTITUE UN SYSTEME DE RETENUE COMPLEMENTAIRE (SRS).
TOUS LES FILS ET CONNECTEURS ELECTRIQUES DU SYSTEME DE RETENUE COMPLEMENTAIRE (SRS) SONT DE COULEUR JAUNE. N'UTILISEZ PAS UN EQUIPEMENT D'ESSAIS ELECTRIQUES SUR CES CIRCUITS. NE TOUCHEZ PAS ET NE DEBRANCHEZ PAS LES FILS DU SYSTEME SRS CAR CECI POURRAIT DE TRADUIRE PAR LE DECLENCHEMENT ACCIDENTEL DU GONFLEUR OU RENDRE LE SYSTEME INOPERANT ET VOUS EXPOSER AINSI A DE GRAVES BLESSURES.

WARNUNG SRS

DIESES FAHRZEUG IST MIT EINEM FAHRER-AIRBAG (SRS) ALS ZUSÄTZLICHEM RÜCKHALTESYSTEM AUSGERÜSTET.
ALLE ELEKTRISCHEN KABEL, SOWIE DIE ZUGEHÖRIGEN STECKVERBINDER DES SRS-SYSTEMS SIND IN GELBER FARBE AUSGEFÜHRT.
KEINE ELEKTRISCHEN PRÜFGERÄTE AN DIE SRS-VERKABELUNG ANSCHLIBN. VERÄNDERN ODER UNTEBRECHEN DER SRS-VERKABELUNG KANN NUKONTROLLIERTES ZÜNDEN DES GASGENERATORS AUSLÖSEN. ODER DAS SYSTEM AUBER FUNKTION SETZEN. WAS ZU ERNSTHAFTEN VERLETZUNGEN FÜHREN KANN.

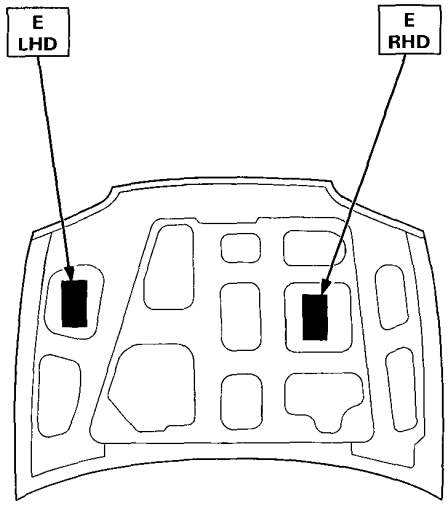
WAARSCHUWING SRS

DIT VOERTUIG IS UITGERUST MET EEN LUCHTKUSSEN AAN DE BESTUURDERSKANT ALS EXTRA BESCHERMING (SRS).
ALLE ELEKTRISCHE LEIDINGEN EN AANSLUTINGEN VAN DE SRS ZIJN GEEL GEKLEURD. GEBRUIK GEEN ELEKTRISCHE TESTAPPARATUUR VOOR DEZE CIRCUITS. KNOEIEN MET OF LOSKOPPELEN VAN DE SRS LEIDINGEN KAN LEIDEN TOT BRAND IN DE VULINRICHTING OF TOT UITSCHAKELEN VAN HET SYSTEEM: DIT KAN TOT ERNSTIGE ONGELUKKEN LEIDEN.

(cont'd)

Warning/Caution Label Locations

(cont'd)



E: SRS WARNING (HOOD) RHD model

SUPPLEMENTAL RESTRAINT SYSTEM (SRS)
THIS VEHICLE IS EQUIPPED WITH A DRIVER SIDE AIRBAG.
ALL SRS ELECTRICAL WIRING AND CONNECTORS ARE COLORED YELLOW.
TAMPERING WITH, DISCONNECTING OR USING ELECTRICAL TEST EQUIPMENT ON THE SRS WIRING CAN MAKE THE SYSTEM INOPERATIVE OR CAUSE ACCIDENTAL FIRING OF THE INFLATOR.

⚠ WARNING
THE AIRBAG INFLATOR IS EXPLOSIVE AND, IF ACCIDENTALLY DEPLOYED, CAN SERIOUSLY HURT YOU. FOLLOW SERVICE MANUAL INSTRUCTIONS CAREFULLY.

E: SRS WARNING (HOOD) KS

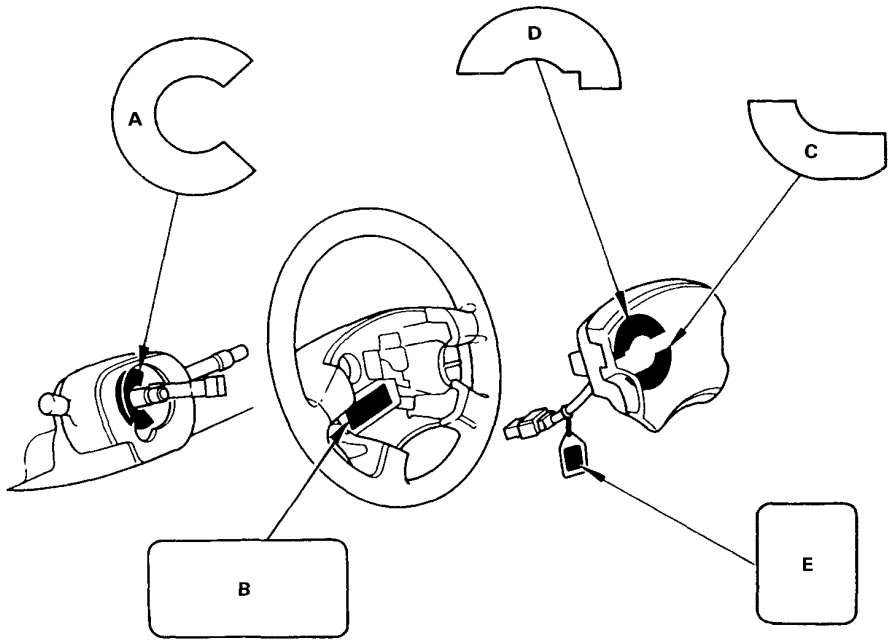
WARNING SRS
THIS VEHICLE IS EQUIPPED WITH A AIRBAG SYSTEM AS A SUPPLEMENTAL RESTRAINT SYSTEM (SRS).
ALL SRS ELECTRICAL WIRING AND CONNECTORS ARE COLORED YELLOW.
DO NOT USE ELECTRICAL TEST EQUIPMENT ON THESE CIRCUITS.
TAMPERING WITH OR DISCONNECTING THE SRS WIRING COULD RESULT IN ACCIDENTAL FIRING OF THE INFLATOR OR MAKE THE SYSTEM INOPERATIVE, WHICH MAY RESULT IN SERIOUS INJURY.

VARING SRS
DETTA FORDON HAR EN LUFTKUDDE FÖR FÖRARSÄTET SOM ETT KOMPLETTERANDE SKYDDSSYSTEM (SRS). SAMTLIGA ELLEDNINGAR OCH KONTAKTER I SRS-SYSTEMET ÄR GULFÄRGADE. ANVÄND INTE ELEKTRISK PROVUTRUSTNING FÖR DESSA KRETSAR. OM DU ÄNDRAR ELLER LOSSAR EN SRS-LEDNING KAN DET RESULTERA I EN OAVSIKTLIG UTLÖSNING AV TRYCKPUMPEN ELLER GÖRA ATT SYSTEMET SLUTAR FUNGERA. DÅ KAN EN ALLVARLIG OLYCKA UPPSTÅ.

VAROITUS SRS
TÄSSÄ AUTOSSA ON YLIMÄÄRÄISENÄ TUKIJÄRJESTELMÄNÄ AJAJAN ILMATYYNY. (SRS) KAIKKI SRS-SÄHKÖJOHDOT JA-LITTIMET OVAT KELTAISET.
ÄLÄ KÄYTÄ SÄHKÖKOELAITTEITA NÄISSÄ VIRTAPIREISAÄ. SRS-JOHTOJEN TUKKEAMINEN TAI IRROTAAMINEN SAATTAA SYTYTTÄÄ VAHINGOSSA PUMPUN TAI TEHDÄ JÄRJESTELMÄN KÄYTTÖKELVOTTOMAKSI.
TÄSTÄ TAAS SAATTAA AIHEUTUA VAKAVIA VAURIOITA.

تنبيه : (S.R.S.)
تم تجهيز هذه السيارة بكيس هوائي لوقاية السائق كنظام كبح اضافي (S.R.S.).
جميع الأسلاك الكهربائية الخاصة بنظام الكبح الاضافي (S.R.S.) والموصلات ملونة باللون الأصفر.
لا تستعمل معدات اختبار الكهرباء على هذه الدوائر. ان العبث أو فصل أسلاك نظام الكبح الاضافي (S.R.S.) يمكن أن يؤدي للحريق العرضي للنافخ أو يتسبب في تعطيل النظام عن العمل مما يؤدي الى حدوث أضرار خطيرة.

SRS AIRBAG SYSTEM TYPE-III (KB)



A: CABLE REAL CAUTION A

SRS

REFER TO SERVICE MANUAL FOR DETAILED INSTRUCTION.

POUR LES INSTRUCTIONS DETAILL'EES, SE REPORTER AU MANUEL DE REPARATIONS.

取扱い、保管はサービスマニュアルを参照してください。

AUSFÜHRLICHE ANMEISUNGEN SIND DEM ZU ENTINEMEN.

RAAD PLEEG HET WERKPLAATSHANDBOEK VOOR NADERE AANWIJZINGEN.

B: STEERING WHEEL NOTICE

NOTICE
IMPROPER STEERING WHEEL REMOVAL OR INSTALLATION CAN DAMAGE SRS COMPONENTS.
FOLLOW SERVICE MANUAL INSTRUCTIONS CAREFULLY.

REMARQUE
UN RETRAIT OU UNE REPOSE INCORRECTS DU VOLANT RISQUENT D'ENDOMMAGER LES PIECES CNSTITUTIVES DU SRS. SUIVRE ATTENTIVMENT LE MANUEL D'ENTRETIEN.

C: DRIVER MODULE WARNING

⚠ WARNING
THE AIRBAG INFLATOR IS EXPLOSIVE AND, IF ACCIDENTALLY DEPLOYED, CAN SERIOUSLY HURT OR KILL YOU.
- DO NOT USE ELECTRICAL TEST EQUIPMENT OR PROBING DEVICES.
  THEY CAN CAUSE ACCIDENTAL DEPLOYMENT.
- NO SERVICEABLE PARTS INSIDE. DO NOT DISASSEMBLE.
- PLACE AIRBAG UPRIGHT WHEN REMOVED.
- FOLLOW SERVICE MANUAL INSTRUCTIONS CAREFULLY.

⚠ ATTENTION
LE GONFLEUR DE COUSSIN D'AIR EST EXPLOSIBLE ET S'LL SE DEPLOIE ACCIDENTELLEMENT, IL RISQUE DE PROVOQUER DES BLESSURES GRAVES OU DE TUER.
- NE PAS UTILISER DE MATERIEL D'ASSAI ELECTRIQUE NI DE SONDE. ILS POURRAIENT PROVOQUER UN DEPLOIMENT ACCIDENTEL DU COUSSIN D'AIR.
- IL N'Y A PAS DE PIECES REPARABLES A L'INTERIEUR. NE PAS DEMONTER.
- QUAND ON RETIRE LE COUSSIN D'AIR, LE TENIR A LA VERTICALE.
- SUIVRE ATTENTIVEMENT LES INSTRUCTIONS DU MANUEL D'ENTRETIEN.

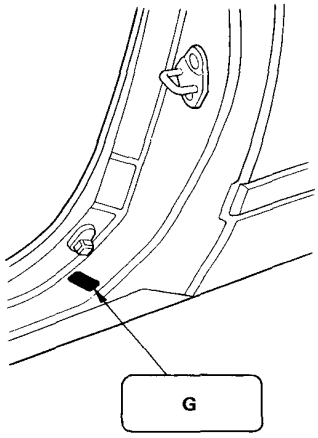
Warning/Caution Label Locations

D: DRIVER MODULE DANGER*

⚠ DANGER
EXPLOSIVE/FLAMMABLE
CONTACT WITH ACID, WATER OR HEAVY METALS SUCH AS COPPER, LEAD OR MERCURY MAY PRODUCE HARMFUL AND IRRITATING GASES OR EXPLOSIVE COMPOUNDS. STORAGE TEMPERATURES MUST NOT EXCEED 200°F (100°C). FOR PROPER HANDLING, STORAGE AND DISPOSAL PROCEDURES REFER TO THE SERVICE MANUAL, SRS SUPPLEMENT.
POISON
CONTAINS POISONOUS SODIUM AZIDE AND POTASSIUM NITRATE.
FIRST AID
IF CONTENTS ARE SWALLOWED, INDUCE VOMITING.
FOR EYE CONTACT, FLUSH EYES WITH WATER FOR 15 MINUTES. IF GASES (FROM ACID OR WATER CONTACT) ARE INHALED, SEEK FRESH AIR. IN EVERY CASE, GET PROMPT MEDICAL ATTENTION.
KEEP OUT OF REACH OF CHILDREN

⚠ DANGER
EXPLOSIBLE/INFLAMMABLE
TOUT CONTACT AVEC L'ACIDE, L'EAU OU DES METAUX LOURDS COMME LE CUIVRE, LE PLOMB OU LE MERCURE RISQUE DE PRODUIRE DES GAZ NOCIFS ET IRRITANTS OU DES COMPOSES EXPLOSIFS. LES TEMPERATURES DE RANGEMENT NE DEVRONT PAS DEPASSER 200°F (100°C). POUR LES PROCEDURES DE MANIPULATION, DE RANGEMENT ET DE MISE AU REBUT, VOIR LE SUPPLEMENT SRS DU MANUEL D'ENTRETIEN.
POISON
RENFERME DE L'ACIDE DE SOUDE ET DU NITRATE DE POTASSIUM TOXIQUES.
PREMIERS SECOURS
SI LE CONTENU EST ABSORBE, INDUIRE UN VOMISSEMENT. EN CAS DE CONTACT AVEC LES YEUX, LAVER A GRANDE EAU PENDANT UN QUART D'HEURE. EN CAS D'INHALATION DES GAZ (PAR CONTACT AVEC L'ACIDE OU L'EAU), ALLER A L'AIR FRAIS. DANS TOUS LES CAS, OBETENIR PROMPTEMENT DES SOINS MEDICAUX. TENIR HORS DE PORTEE DES ENFANTS.

*Label D and E locations: Refer to page 1-11.



E:DRIVER INFLATOR WARNING TAG*

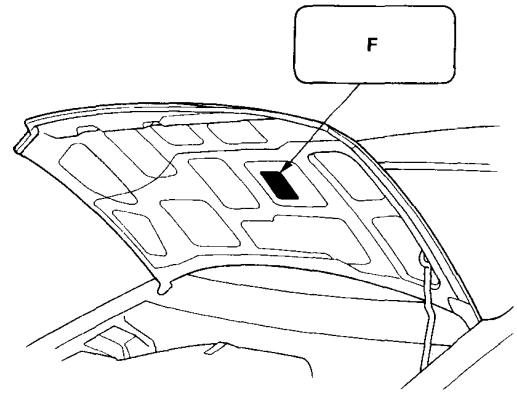
⚠ WARNING
ACCIDENTAL AIRBAG DEPLOYMENT CAN SERIOUSLY HURT OR KILL YOU.
INSTALL THE RED SERVICE CONNECTOR WHEN THE INFLATOR HARNESS IS DISCONNECTED.

⚠ ATTENTION
TOUT DEPLOIEMENT ACCIDENTEL DU COUSSIN D'AIR RISQUE DE PROVOQUER DES BLESSURES GRAVES OU DE TUER
QUAND LE FAISCEAU DE FILS DU GONFLEUR EST DECONNECTE, INSTALLER LE CONNECTURE D'ENTRETIEN ROUGE.

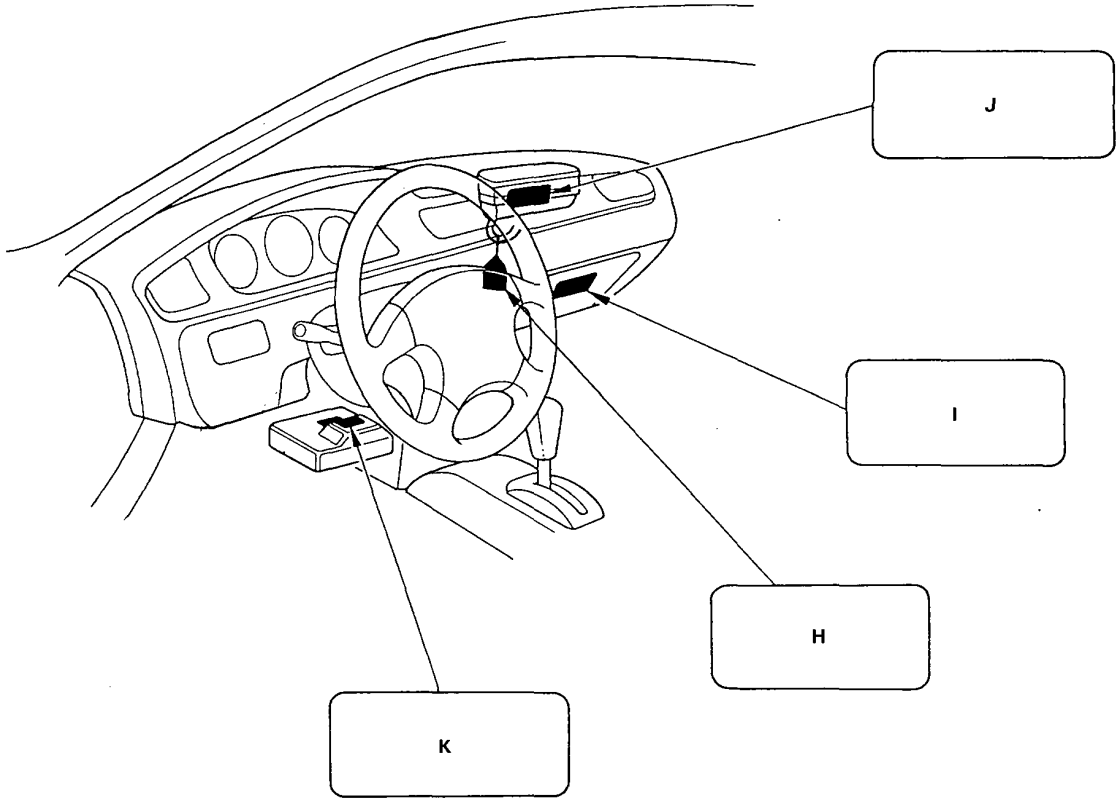
F: SRS WARNING (HOOD)

SUPPLEMENTAL RESTRAINT SYSTEM (SRS)
THIS VEHICLE IS EQUIPPED WITH A DRIVER AND FRONT SEAT PASSENGER AIRBAG.
ALL SRS ELECTRICAL WIRING AND CONNECTORS ARE COLORED YELLOW.
TAMPERING WITH, DISCONNECTING OR USING ELECTRICAL TEST EQUIPMENT ON THE SRS WIRING CAN MAKE THE SYSTEM INOPERATIVE OR CAUSE ACCIDENTAL FIRING OF THE INFLATOR.

⚠ WARNING
THE AIRBAG INFLATOR IS EXPLOSIVE AND, IF ACCIDENTALLY DEPLOYED, CAN SERIOUSLY HURT YOU.
FOLLOW SERVICE MANUAL INSTRUCTIONS CAREFULLY.



G: LABEL
AIRBAG



H: FRONT SEAT PASSENGER INFLATOR WARNING TAG

⚠ WARNING
ACCIDENTAL AIRBAG DEPLOYMENT CAN SERIOUSLY HURT OR KILL YOU.
INSTALL THE RED SERVICE CONNECTOR WHEN THE INFLATOR HARNESS IS DISCONNECTED.

⚠ ATTENTION
TOUT DEPLOIEMENT ACCIDENTEL DU COUSSIN D'AIR RISQUE DE PROVOQUER DES BLESSURES GRAVES OU DE TUER.
QUAND LE FAISCEAU DE FILS DU GONFLEUR EST DECONNECTE, INSTALLER LE CONNECTURE D'ENTRETIEN ROUGE.

I: GLOVE BOX INFORMATION

AIRBAG INFORMATION
SUPPLEMENTAL RESTRAINT SYSTEM (SRS)
- THE SRS MUST BE INSPECTED TEN YEARS AFTER IT IS INSTALLED. THE DATE OF INSTALLATION IS SHOWN ON THE CERTIFICATION PLATE, LOCATED ON THE DRIVER'S DOOR JAMB.
- DIAGNOSTIC CHECKS AND REPLACEMENT OF SRS COMPONENTS MUST BE DONE BY AN AUTHORIZED DEALER.
- SEE YOUR OWNER'S MANUAL FOR ADDITIONAL SRS INFORMATION.

(cont'd)

Warning/Caution Label Locations

(cont'd)

J: FRONT SEAT PASSENGER AIRBAG MODULE DANGER

⚠ DANGER
EXPLOSIVE/FLAMMABLE
CONTACT WITH ACID, WATER OR HEAVY METALS SUCH AS COPPER, LEAD OR MERCURY MAY PRODUCE HARMFUL AND IRRITATING GASES OR EXPLOSIVE COMPOUNDS. STORAGE TEMPERATURE MUST NOT EXCEED 200°F (100°C). FOR PROPER HANDLING, STORAGE AND DISPOSAL PROCEDURES REFER TO SERVICE MANUAL, SRS SUPPLEMENT.
POISON
CONTAINS POISONOUS SODIUM AZIDE AND POTASSIUM NITRATE.
FIRST AID
IF CONTENTS ARE SWALLOWED, INDUCE VOMITING.
FOR EYE CONTACT, FLUSH EYES WITH WATER FOR 15 MINUTES. IF GASES (FROM ACID OR WATER CONTACT) ARE INHALED, SEEK FRESH AIR.
IN EVERY CASE, GET PROMPT MEDICAL ATTENTION.
KEEP OUT OF REACH OF CHILDREN.

⚠ WARNING
THE AIRBAG INFLATOR IS EXPLOSIVE AND, IF ACCIDENTALLY DEPLOYED, CAN SERIOUSLY HURT OR KILL YOU.
- DO NOT USE ELECTRICAL TEST EQUIPMENT OR PROBING DEVICES. THEY CAN CAUSE ACCIDENTAL DEPLOYMENT.
- NO SERVICEABLE PARTS INSIDE. DO NOT DISASSEMBLE.
- PLACE AIRBAG UPRIGHT WHEN REMOVED.
- FOLLOW SERVICE MANUAL INSTRUCTIONS CAREFULLY.

⚠ DANGER
EXPLOSIBLE/INFLAMMABLE
TOUT CONTACT AVEC L'ACIDE, L'EAU OU DES METAUX LOURDS COMME LE CUIVRE, LE PLOMB OU LE MERCURE RISQUE DE PRODUIRE DES GAZ NOCIFS ET IRRITANTS OU DES COMPOSES EXPLOSIFS. LES TEMPERATURES DE RANGEMENT NE DEVRONT PAS DEPASSER 200°F (100°C). POUR LES PROCEDURES DE MANIPULATION, DE RANGEMENT ET DE MISE AU REBUT, VOIR LE SUPPLEMENT SRS DU MANUEL D'ENTRETIEN.
POISON
RENFERME DE L'ACIDE DE SOUDE ET DU NITRATE DE POTASSIUM TOXIQUES.
PREMIERS SECOURS
SI LE CONTENU EST ABSORBE, INDUIRE UN VOMISSEMENT. EN CAS DE CONTACT AVEC LES YEUX, LAVER A GRANDE EAU PENDANT UN QUART D'HEURE. EN CAS D'INHALATION DES GAZ (PAR CONTACT AVEC L'ACIDE OU L'EAU), ALLER A L'AIR FRAIS. DANS TOUS LES CAS, OBETENIR PROMPTEMENT DES SOINS MEDICAUX. TENIR HORS DE PORTEE DES ENFANTS.

⚠ ATTENTION
LE GONFLEUR DE COUSSIN D'AIR EST EXPLOSIBLE ET S'LL SE DEPLOIE ACCIDENTELLEMENT, IL RISQUE DE PROVOQUER DES BLESSURES GRAVES OU DE TUER.
- NE PAS UTILISER DE MATERIEL D'ASSAI ELECTRIQUE NI DE SONDE. ILS POURRAIENT PROVOQUER UN DEPLOIEMENT ACCIDENTEL DU COUSSIN D'AIR.
- IL N'Y A PAS DE PIECES REPARABLES A L'INTERIEUR. NE PAS DEMONTER.
- QUAND ON RETIRE LE COUSSIN D'AIR, LE TENIR A LA VERTICALE.
- SUIVRE ATTENTIVEMENT LES INSTRUCTIONS DU MANUEL D'ENTRETIEN.

K: MONITOR NOTICE

NOTICE SRS
- NO SERVICEABLE PARTS INSIDE
- REFER TO SERVICE MANUAL FOR DETAILED INSTRUCTIONS.

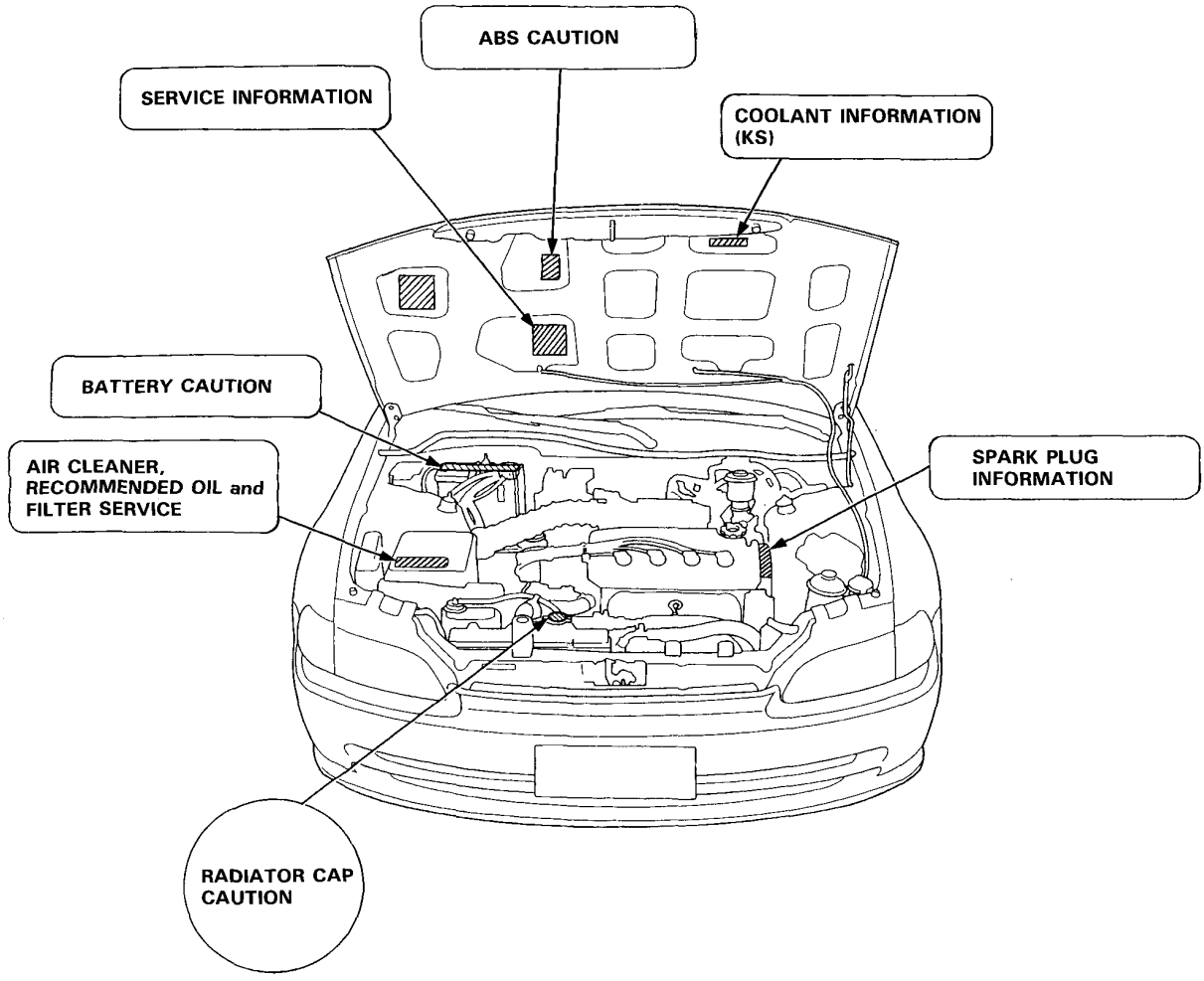
お願い
・分解しないでください。
・取扱い、保管はサービスマニュアルを参照してください。

REMARQUE
- AUCUNE PIECE REPARABLE A L'INTERIEUR.
- POUR LES INSTRUCTIONS DETAILL'EES, SE REPORTER AU MANUEL DE REPARATIONS.

LET UP!
- GEEN ONDERDELEN BINNEN DEZE UNIT WAARAAN WERKZAAMHEDEN KUNNEN WORDEN VERRICHT.
- RAADPLEEG HET WERKPLAATSHANDBOEX VOOR NADERE AANWIJZINGEN.

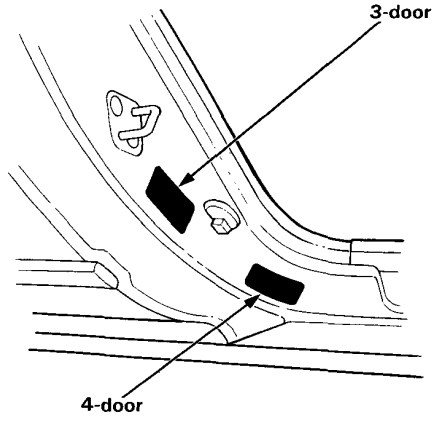
ACHTUNG
- DIE INNENTILE BEDÜRFEN KEINER WARTUNG.
- AUSFÜHRLICHE ANWEISUNGEN SIND DEM WERKSTATTHANBUCH ZU ENTNEHMEN.

Label J and K locations: Refer to page 1-13.

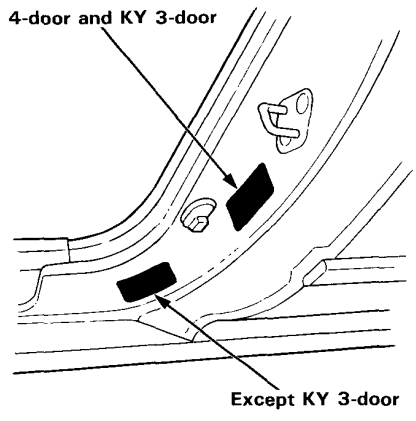


TIRE INFORMATION

RHD:



LHD:



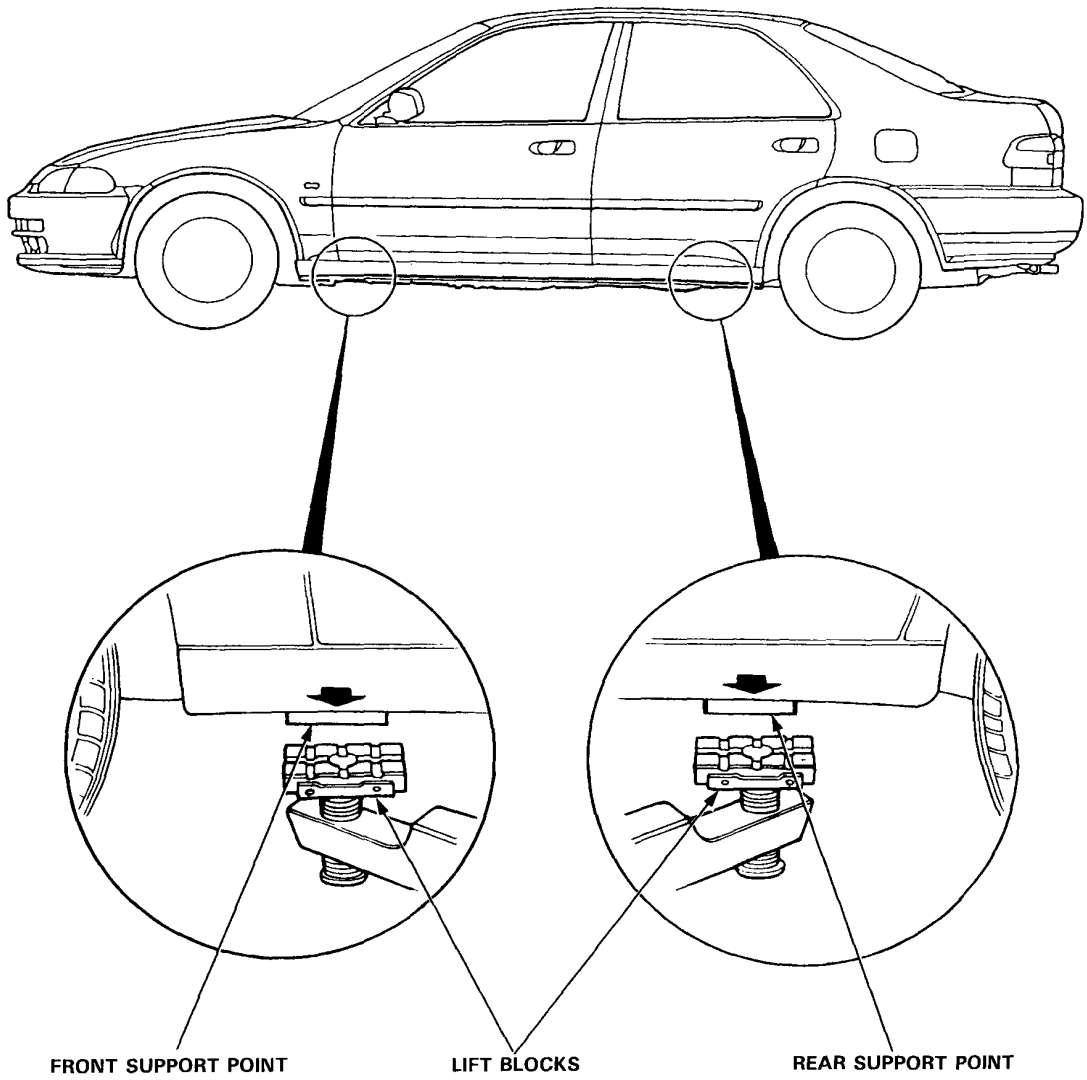
Lift and Support Points

Lift

⚠ WARNING When heavy rear components such as suspension, fuel tank, spare tire and hatch are to be removed, place additional weight in the luggage area before hoisting. When substantial weight is removed from the rear of the car, the center of gravity may change and can cause the car to tip forward on the hoist.

NOTE: Since each tire/wheel assembly weighs approximately 14 kg (30 lbs), placing the front wheels in the trunk can assist with the weight distribution.

1. Place the lift blocks as shown.
2. Raise the hoist until the tyres are slightly off the ground and rock the car to be sure it is firmly supported.
3. Raise the hoist to full height and inspect lift points for solid support.



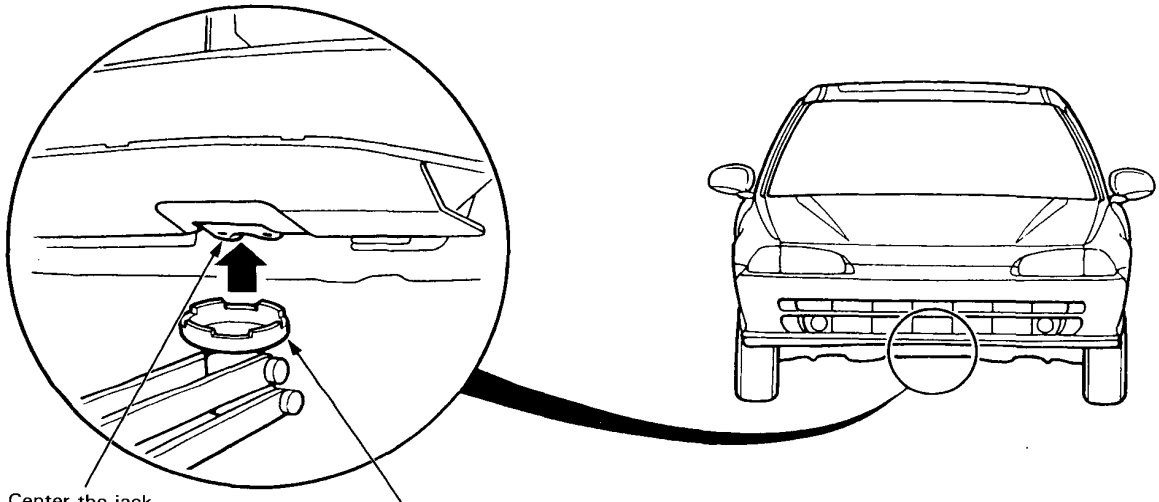
Floor Jack

1. Set the parking brake and block the wheels that are not being lifted.
2. When lifting the rear of the car, put the gearshift lever in reverse (Automatic in [P] position).
3. Raise the car high enough to insert the safety stands.
4. Adjust and place the safety stands as shown on page 1-18 so the car will be approximately level, then lower the car onto them.

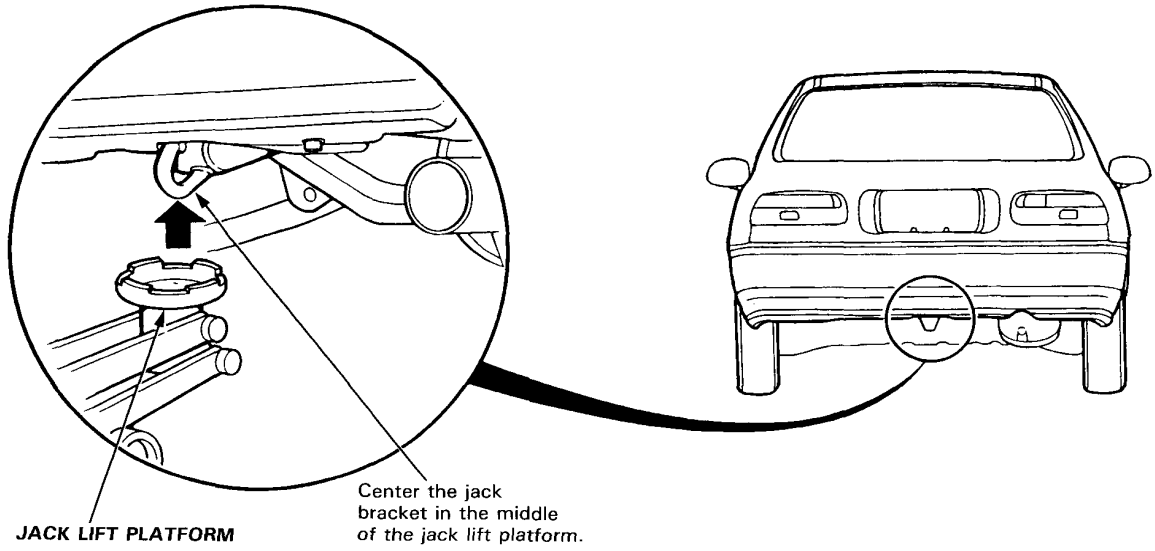
⚠ WARNING

- **Always use safety stands when working on or under any vehicle that is supported by only a jack.**
- **Never attempt to use a bumper jack for lifting or supporting the car.**

Front

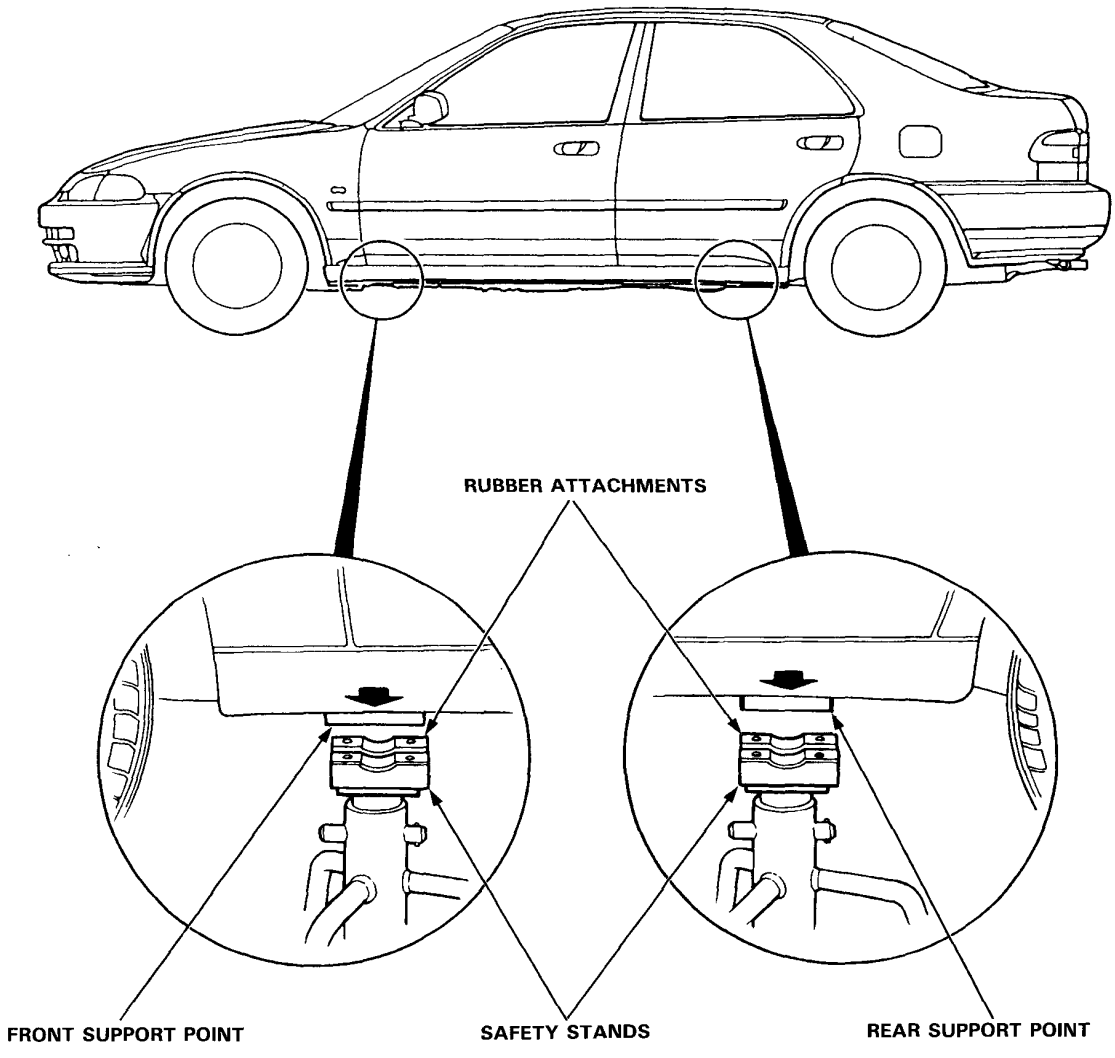


Rear



Lift and Support Points

Safety Stands



Towing

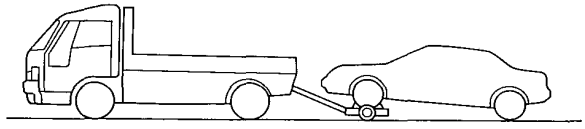
If the car needs to be towed, call a professional towing service. Never tow the car behind another car with just a rope or chain. It is very dangerous.

Emergency Towing
There are three popular methods of towing a car:

Flat-bed Equipment — The operator loads the car on the back of a truck. This is the best way of towing the car.

Wheel Lift Equipment — The tow truck uses two pivoting arms which go under the tires (front or rear) and lifts them off the ground. The other two wheels remain on the ground.

NOTICE: On 4WD model
Never tow your car with the front or rear wheels off the ground and locked on the towing dolly as shown in the illustration.
This method of towing may damage your car's transmission and the vehicle may jump off the dolly.



Sling-type Equipment — The tow truck uses metal cables with hooks on the ends. These hooks go around parts of the frame or suspension, and the cables lift that end of the car off the ground. The car's suspension and body can be seriously damaged if this method of towing is attempted.

If the car cannot be transported by flat-bed, it should be towed with the front wheels off the ground. If due to damage, the car must be towed with the front wheels on the ground, do the following:

Manual Transmission
- Release the parking brake.
- Shift to transmission in neutral.

Automatic Transmission
- Release the parking brake.
- Start the engine.
- Shift to transmission in [D4] position, then in [N] position.
- Turn off the engine.

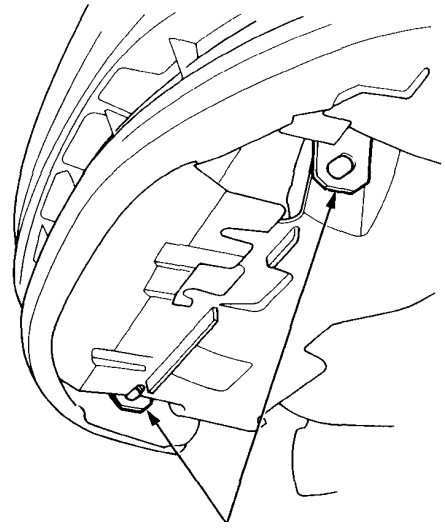
NOTICE: Improper towing preparation will damage the transmission. Follow the above procedure exactly. If you cannot shift the transmission or start the engine (automatic transmission), the car must be transported on a flat-bed.

- It is best to tow the car no farther than 80 km (50 miles), and keep the speed below 55 km/h (35 mph).

NOTICE: Trying to lift or tow the car by the bumpers will cause serious damage. The bumpers are not designed to support the car's weight.

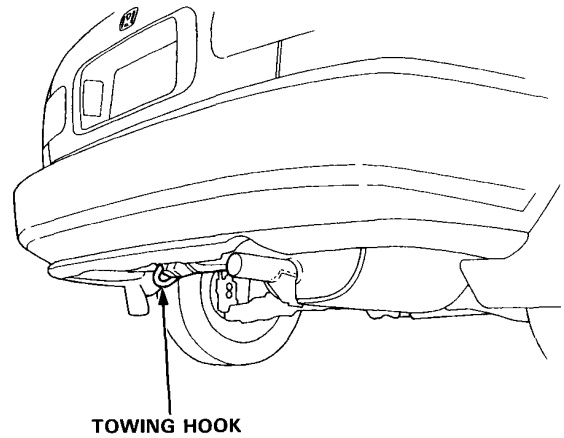
Front:

CAUTION: If the car is equipped with a front spoiler, remove it before towing so it is damaged.



TIE DOWN HOOKS

Rear:



TOWING HOOK

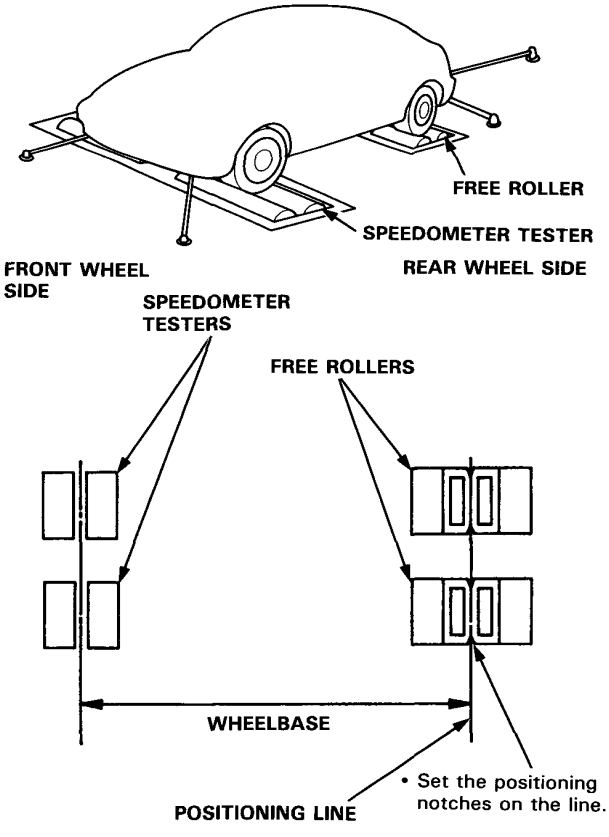
This 4-wheel drive model is not equipped with the system that mechanically shifts the drive system to the 2-wheel drive.

Therefore, perform the speedometer test by using the free rollers.

Tip on use of free roller:
- Test cannot be made by using the chassis dynamometer.
- Do not operate the accelerator pedal, clutch, brake system and steering wheel quickly. The car can roll hard or dash out during the test which is very dangerous.
- Do not raise the speed more than 50 km/h.
- Do not use the free rollers continuously for more than 3 minutes at one try.
- Secure the car for safety. Attach the ropes to the car not to allow it to roll or dash out during the test. (Use the free rollers for the rear wheels)

1. Set each of the free rollers at the wheelbase and track of the car.

   NOTE: Be sure that the free rollers and speedometer tester rollers are set parallel with each other.

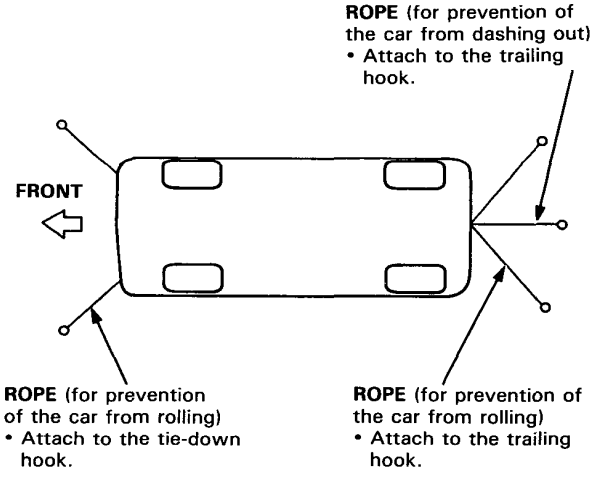


2. Move the car to set the front wheels on the speedometer testers and the rear wheels on the free rollers. Be sure that the wheels are set at the center of the speedometer testers and free rollers respectively.

   CAUTION: Be sure that the front and rear wheels are set at the center of the speedometer tester and free rollers securely, or the car can roll hard or dash out during the test, which is very dangerous.

3. Attach the ropes to the trailing hook and tie-down hooks to secure the car (For prevention of the car from rolling hard or dashing out during the test).

   CAUTION:
   - **Be sure that the ropes attached to the car for prevention of rolling are not slack. Slack ropes do not effectively secure the car and the car can roll during the test.**
   - **Attach the ropes to the car not to interfere with the bumper.**
   - **Do not attach the ropes to any section other than the specified section.**


ROPE (for prevention of the car from dashing out)
• Attach to the trailing hook.
FRONT
ROPE (for prevention of the car from rolling)
• Attach to the tie-down hook.
ROPE (for prevention of the car from rolling)
• Attach to the trailing hook.

4. Start the engine. With the gearshift lever in the 3rd range on the manual transmission car or the gearshift lever in the D1 or D2 position on the automatic transmission car, start the car and raise the speed gradually.

   CAUTION: Take care not to exceed 50 km/h of speed and do not test for more than 3 minutes continuously.

5. After the test, slow down the car until it stops by applying the brake gradually.

Special Tools

Individual tool lists are located at the front of each section.

Specifications

Standards and Service Limits 3-2
Design Specifications 3-38
Body Specifications 3-47

Standards and Service Limits

Cylinder Head/Valve Train — Section 6
D12B1, D13B2, D13B3, D15B2, D15B3, D15B7, D15Z2, D16A7 Engines

MEASUREMENT			STANDARD (NEW)	SERVICE LIMIT
Compression	250 min^{-1} (rpm) and wide open throttle kPa (kg/cm^2, psi)	Nominal Minimum Maximum variation	1,300 (13.0, 184) 950 (9.5, 135) 200 (2.0, 28)	
Cylinder head	Warpage		———	0.05 (0.002)
	Height		94.95 – 95.05 (3.738 – 3.742)	———
Camshaft	End play		0.05 – 0.15 (0.002 – 0.006)	0.5 (0.02)
	Camshaft-to-holder oil clearance		0.050 – 0.089 (0.002 – 0.004)	0.15 (0.006)
	Total runout		0.03 (0.001) max.	0.04 (0.002)
	Cam lobe height	D12B1, D13B2, D13B3 IN	35.472 (1.3965)	———
		EX	35.693 (1.4052)	———
		D15B3 IN	36.603 (1.4411)	———
		EX	36.747 (1.4467)	———
		D15B2 IN	36.603 (1.4411)	———
		EX	36.750 (1.4468)	———
		D16A7 IN	36.782 (1.4481)	———
		EX	36.947 (1.4546)	———
		D15B7, D15Z2 IN	36.057 (1.4196)	———
		EX	36.198 (1.4251)	———
Valve	Valve clearance	IN	0.18 – 0.22 (0.007 – 0.009)	———
		EX	0.23 – 0.27 (0.009 – 0.011)	———
	Valve stem O.D.	IN	5.48 – 5.49 (0.2157 – 0.2161)	5.45 (0.2183)
		EX	5.45 – 5.46 (0.2146 – 0.2150)	5.42 (0.2134)
	Stem-to-guide clearance	IN	0.02 – 0.05 (0.001 – 0.002)	0.08 (0.003)
		EX	0.05 – 0.08 (0.002 – 0.003)	0.11 (0.004)
Valve seat	Width	IN	0.85 – 1.15 (0.033 – 0.045)	1.6 (0.063)
		EX	1.25 – 1.55 (0.049 – 0.061)	2.0 (0.079)
	Stem installed height	IN	46.985 – 47.455 (1.8498 – 1.8683)	47.705 (1.8781)
		EX	48.965 – 49.435 (1.9278 – 1.9463)	49.685 (1.9561)
Valve spring	Free length	D12B1, D13B2, D13B3 IN	47.97 (1.889)	———
		EX	49.19 (1.937)	———
		D15B2, D15B3, D16A7 IN	48.58 (1.913)	———
		EX	49.19 (1.937)	———
		D15B7, D15Z2 IN	51.90 (2.043)*1	———
			51.88 (2.043)*2	———
		EX	55.28 (2.176)*1	———
			55.31 (2.178)*2	———
Valve guide	I.D.	IN	5.51 – 5.53 (0.217 – 0.218)	5.55 (0.219)
		EX	5.51 – 5.53 (0.217 – 0.218)	5.55 (0.219)
	Installed height	IN	15.95 – 16.45 (0.628 – 0.648)	———
		EX	15.95 – 16.45 (0.628 – 0.648)	———
Rocker arm	Arm-to-shaft clearance	IN	0.017 – 0.050 (0.0007 – 0.0020)	0.08 (0.003)
		EX	0.018 – 0.054 (0.0007 – 0.0021)	0.08 (0.003)

*1: NIHON HATSUJO manufactured valve spring. *2: CHUO HATSUJO manufactured valve spring.

Unit of length: mm (in)

Cylinder Head/Valve Train — Section 6
D15Z1, D16Z7, D16Y1 Engines

MEASUREMENT				STANDARD (NEW)	SERVICE LIMIT
Compression	250 min^{-1} (rpm) and wide open throttle kPa (kg/cm^2, psi)	Nominal		1,300 (13.0, 184)	
		Minimum		1,150 (11.5, 166)	
		Maximum variation		200 (2.0, 28)	
Cylinder head	Warpage			———	0.05 (0.002)
	Height			92.95 – 93.05 (3.659 – 3.663)	———
Camshaft	End play			0.05 – 0.15 (0.002 – 0.006)	0.5 (0.02)
	Camshaft-to-holder oil clearance			0.050 – 0.089 (0.002 – 0.004)	0.15 (0.006)
	Total runout			0.03 (0.001) max.	0.04 (0.002)
	Cam lobe height	D15Z1	IN Primary	38.427 (1.5129)	———
			IN Secondary	32.292 (1.2713)	———
			EX	37.997 (1.4959)	———
		Except D15Z1	IN Primary	35.900 (1.4134)	———
			IN Mid	38.107 (1.5003)	———
			IN Secondary	36.195 (1.4250)	———
			EX	38.008 (1.4964)	———
Valve	Valve clearance		IN	0.18 – 0.22 (0.007 – 0.009)	———
			EX	0.23 – 0.27 (0.009 – 0.011)	———
	Valve stem O.D.		IN	5.48 – 5.49 (0.2157 – 0.2161)	5.45 (0.2183)
			EX	5.45 – 5.46 (0.2146 – 0.2150)	5.42 (0.2134)
	Stem-to-guide clearance		IN	0.02 – 0.05 (0.001 – 0.002)	0.08 (0.003)
			EX	0.05 – 0.08 (0.002 – 0.003)	0.12 (0.005)
Valve seat	Width		IN	0.85 – 1.15 (0.033 – 0.045)	1.6 (0.063)
			EX	1.25 – 1.55 (0.049 – 0.061)	2.0 (0.079)
	Stem installed height		IN	53.165 – 53.635 (2.0931 – 2.1116)	53.885 (2.1215)
			EX	53.165 – 53.635 (2.0931 – 2.1116)	53.885 (2.1215)
Valve spring	Free length	D15Z1	IN	54.78 (2.157)	———
			EX	58.23 (2.293)*1	———
				58.26 (2.294)*2	———
		Except D15Z1	IN	57.97 (2.282)	———
			EX	58.41 (2.300)	———
Valve guide	I.D.		IN	5.51 – 5.53 (0.217 – 0.218)	5.60 (0.220)
			EX	5.51 – 5.53 (0.217 – 0.218)	5.60 (0.220)
	Installed height		IN	17.85 – 18.35 (0.703 – 0.722)	———
			EX	18.65 – 19.15 (0.734 – 0.754)	———
Rocker arm	Arm-to-shaft clearance		IN	0.017 – 0.050 (0.0007 – 0.0020)	0.08 (0.003)
			EX	0.018 – 0.054 (0.0007 – 0.0021)	0.08 (0.003)

*1: NIHON HATSUJO manufactured valve spring. *2: CHUO HATSUJO manufactured valve spring.

Standards and Service Limits

Cylinder Head/Valve Train — Section 6
D16A9 Engine

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Compression	250 min^{-1} (rpm) and wide open throttle kPa (kg/cm^2, psi)	Nominal Minimum Maximum variation	1,350 (13.5, 192) 950 (9.5, 135) 200 (2.0, 28)	
Cylinder head	*Warpage*		—	0.05 (0.002)
	Height		131.95 – 132.05 (5.195 – 5.199)	—
Camshaft	End play		0.05 – 0.15 (0.002 – 0.006)	0.5 (0.02)
	Camshaft-to-holder oil clearance		0.050 – 0.089 (0.002 – 0.004)	0.15 (0.006)
	Total runout		0.03 (0.001) max.	0.04 (0.002)
	Cam lobe height	IN	33.021 (1.3000)	—
		EX	32.382 (1.2749)	—
Valve	Valve clearance	IN	0.13 – 0.17 (0.005 – 0.007)*	—
		EX	0.15 – 0.19 (0.006 – 0.008)*	—
	Valve stem O.D.	IN	6.58 – 6.59 (0.2591 – 0.2594)	6.55 (0.2579)
		EX	6.55 – 6.56 (0.2579 – 0.2583)	6.52 (0.2567)
	Stem-to-guide clearance	IN	0.02 – 0.05 (0.001 – 0.002)	0.08 (0.003)
		EX	0.05 – 0.08 (0.002 – 0.003)	0.11 (0.004)
Valve seat	Width	IN	1.25 – 1.55 (0.049 – 0.061)	2.0 (0.079)
		EX	1.25 – 1.55 (0.049 – 0.061)	2.0 (0.079)
	Stem installed height	IN	45.545 – 46.015 (1.793 – 1.812)	46.265 (1.821)
		EX	44.735 – 45.205 (1.761 – 1.780)	45.455 (1.790)
Valve spring	Free length	IN	47.49 (1.870)	—
		EX	46.89 (1.846)	—
Valve guide	I.D.	IN and EX	6.61 – 6.63 (0.260 – 0.261)	6.65 (0.262)
	Installed height	IN and EX	19.15 – 19.65 (0.754 – 0.774)	—

*: Measuring point between camshaft and rocker arm.

Unit of length: mm (in)

Cylinder Head/Valve Train — Section 6
B16A2 Engine

MEASUREMENT			STANDARD (NEW)	SERVICE LIMIT
Compression	250 min^{-1} (rpm) and wide open throttle kPa (kg/cm^2, psi)	Nominal Minimum Maximum variation	1,550 (15.5, 220) 950 (9.5, 135) 200 (2.0, 28)	
Cylinder head	Warpage		———	0.05 (0.002)
	Height		141.95 – 142.05 (5.589 – 5.593)	———
Camshaft	End play		0.05 – 0.15 (0.002 – 0.006)	0.5 (0.02)
	Camshaft-to-holder oil clearance		0.050 – 0.089 (0.002 – 0.004)	0.15 (0.006)
	Total runout		0.03 (0.001) max.	0.04 (0.002)
	Cam lobe height	IN Primary	33.088 (1.3027)	———
		Mid	36.267 (1.4278)	———
		Secondary	34.978 (1.3771)	———
		EX Primary	32.785 (1.2907)	———
		Mid	35.720 (1.4063)	———
		Secondary	34.691 (1.3658)	———
Valve	Valve clearance	IN	0.15 – 0.19 (0.006 – 0.007)*	———
		EX	0.17 – 0.21 (0.007 – 0.008)*	———
	Valve stem O.D.	IN	5.475 – 5.485 (0.2156 – 0.2159)	5.445 (0.2144)
		EX	5.450 – 5.460 (0.2146 – 0.2150)	5.420 (0.2134)
	Stem-to-guide clearance	IN	0.025 – 0.055 (0.0010 – 0.0022)	0.08 (0.003)
		EX	0.050 – 0.080 (0.0020 – 0.0031)	0.11 (0.004)
Valve seat	Width	IN	1.25 – 1.55 (0.049 – 0.061)	2.0 (0.079)
		EX	1.25 – 1.55 (0.049 – 0.061)	2.0 (0.079)
	Stem installed height	IN	37.465 – 37.935 (1.4750 – 1.4935)	38.185 (1.5033)
		EX	37.165 – 37.635 (1.4632 – 1.4817)	37.885 (1.4915)
Valve spring	Free length	IN OUTER	40.92 (1.611)*1	———
			40.91 (1.611)*2	———
		INNER	36.71 (1.445)	———
		EX	41.96 (1.652)*1	———
			41.94 (1.651)*2	———
Valve guide	I.D.	IN	5.51 – 5.53 (0.217 – 0.218)	5.55 (0.219)
		EX	5.51 – 5.53 (0.217 – 0.218)	5.55 (0.219)
	Installed height	IN	12.55 – 13.05 (0.494 – 0.514)	———
		EX	12.55 – 13.05 (0.494 – 0.514)	———
Rocker arm	Arm-to-shaft clearance	IN	0.025 – 0.052 (0.0009 – 0.0020)	0.08 (0.003)
		EX	0.025 – 0.052 (0.0009 – 0.0020)	0.08 (0.003)

*: Measuring point between camshaft and rocker arm.
*1: NIHON HATSUJO manufactured valve spring. *2: CHUO HATSUJO manufactured valve spring.

Standards and Service Limits

Engine Block — Section 7
Except B16A2 Engine

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Cylinder block	Wapage of deck surface	0.07 (0.003) max.	0.10 (0.004)
	Bore diameter	75.00 – 75.02 (2.953 – 2.954)	75.07 (2.956)
	Bore taper	———	0.05 (0.002)
	Reboring limit	———	0.5 (0.02)
Piston	Skirt O.D. At 16 mm (0.6 in) from bottom of skirt	74.980 – 74.990 (2.9520 – 2.9524)	74.970 (2.9516)
	Clearance in cylinder	0.010 – 0.040 (0.0004 – 0.0016)	0.05 (0.002)
	Groove width (for ring)		
	Top D15Z1	1.020 – 1.030 (0.0402 – 0.0406)	1.05 (0.041)
	Except D15Z1	1.220 – 1.230 (0.0480 – 0.0484)	1.25 (0.049)
	Second D15Z1	1.220 – 1.230 (0.0480 – 0.0484)	1.25 (0.049)
	Except D15Z1	1.520 – 1.530 (0.0598 – 0.0602)	1.55 (0.061)
	Oil D15Z1, D16Z6, D16Z7, D16Y1	2.805 – 2.820 (0.1104 – 0.1110)	2.85 (0.112)
	D15Z2, D15B2, D15B7, D16A7, D16A9	2.805 – 2.825 (0.1104 – 0.1112)	2.85 (0.112)
	D12B1, D13B2, D13B3, D15B3	4.005 – 4.025 (0.1577 – 0.1585)	4.05 (0.159)
Piston ring	Ring-to-groove clearance Top D15Z1	0.035 – 0.060 (0.0014 – 0.0024)	0.13 (0.005)
	Except D15Z1	0.030 – 0.055 (0.0012 – 0.0022)*1	0.13 (0.005)
		0.030 – 0.060 (0.0012 – 0.0024)*2,*3	0.13 (0.005)
	Second D15Z1	0.035 – 0.060 (0.0014 – 0.0024)*1	0.13 (0.005)
		0.030 – 0.055 (0.0012 – 0.0022)*2	0.13 (0.005)
	Except D15Z1	0.030 – 0.055 (0.0012 – 0.0022)	0.13 (0.005)
	Ring end gap Top	0.15 – 0.30 (0.006 – 0.012)	0.60 (0.024)
	Second	0.30 – 0.45 (0.012 – 0.018)	0.70 (0.028)
	Oil D15Z1	0.20 – 0.50 (0.008 – 0.020)*1	0.70 (0.028)
		0.20 – 0.70 (0.008 – 0.028)*2	0.80 (0.031)
	D16Z6, D16Y1	0.20 – 0.50 (0.008 – 0.020)*1	0.70 (0.028)
		0.20 – 0.80 (0.008 – 0.031)*2	0.90 (0.035)
	D16Z7	0.20 – 0.50 (0.008 – 0.020)	0.70 (0.028)
	Except D15Z1, D16Z6, D16Z7, D16Y1	0.20 – 0.80 (0.008 – 0.031)	0.90 (0.035)
Piston Pin	O.D.	18.994 – 19.000 (0.7478 – 0.7480)	———
	Pin-to-piston clearance	0.010 – 0.022 (0.0004 – 0.0009)	———
Connecting rod	Pin-to-rod interference	0.014 – 0.040 (0.0006 – 0.0016)	———
	Small end bore diameter	18.96 – 18.98 (0.746 – 0.747)	———
	Large end bore diameter		
	Nominal D12B1, D13B2, D13B3	43.0 (1.69)	———
	D15B2, D15B3, D15B7, D15Z1, D15Z2	45.0 (1.77)	———
	D16A7, D16A9, D16Z6, D16Z7, D16Y1	48.0 (1.89)	———
	End play installed on crankshaft	0.15 – 0.30 (0.006 – 0.012)	0.40 (0.016)
Crankshaft	Main journal diameter		
	D12B1, D13B2, D13B3, D15B2, D15B3, D15B7, D15Z1, D15Z2	44.976 – 45.000 (1.7707 – 1.7717)	———
	D16A7, D16A9, D16Z6, D16Z7, D16Y1	54.976 – 55.000 (2.1644 – 2.1654)	———
	Rod journal diameter		
	D12B1, D13B2, D13B3	39.976 – 40.000 (1.5739 – 1.5748)	———
	D15B2, D15B3, D15B7, D15Z1, D15Z2	41.976 – 42.000 (1.6256 – 1.6535)	———
	D16A7, D16A9, D16Z6, D16Z7, D16Y1	44.976 – 45.000 (1.7707 – 1.7717)	———
	Taper	0.0025 (0.00010) max.	0.005 (0.0002)
	Out-of round	0.0025 (0.00010) max.	0.005 (0.0002)
	End play	0.10 – 0.35 (0.004 – 0.014)	0.45 (0.018)
	Total runout	0.03 (0.001) max.	0.04 (0.002)
Bearings	Main bearing-to-journal oil clearance		
	No. 1 and 5 journals	0.018 – 0.036 (0.0007 – 0.0014)	0.05 (0.002)
	No. 2, 3 and 4 journals	0.024 – 0.042 (0.0009 – 0.0017)	0.05 (0.002)
	Rod bearing-to-journal oil clearance	0.020 – 0.038 (0.0008 – 0.0014)	0.05 (0.002)

*1: TEIKOKU PISTON RING manufactured piston ring.
*2: RIKEN manufactured piston ring.
*3: ALLIED RING CORP manufactured piston ring.

Unit of length: mm (in)

Engine Block — Section 7
B16A2 Engine

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Cylinder block	Warpage of deck surface		0.05 (0.002)	0.08 (0.03)
	Bore diameter		81.000 – 81.020 (3.1890 – 3.1898)	81.070 (3.1917)
	Bore taper		———	0.05 (0.002)
	Reboring limit		———	0.25 (0.01)
Piston	Skirt O.D. At 15 mm (0.59 in) from bottom of skirt		80.980 – 80.990 (3.1882 – 3.1886)	80.970 (3.1878)
	Clearance in cylinder		0.010 – 0.035 (0.0004 – 0.0014)	0.05 (0.002)
	Ring groove width	Top	1.030 – 1.040 (0.0406 – 0.0409)	1.060 (0.0417)
		2nd	1.230 – 1.240 (0.0484 – 0.0488)	1.260 (0.0496)
		Oil	2.805 – 2.820 (0.1104 – 0.1110)	2.840 (0.1118)
Piston ring	Piston-to-ring clearance	Top	0.045 – 0.070 (0.0018 – 0.0028)	0.13 (0.005)
		2nd	0.040 – 0.065 (0.0016 – 0.0026)	0.13 (0.005)
	Ring end gap	Top	0.20 – 0.35 (0.008 – 0.014)	0.60 (0.024)
		2nd	0.40 – 0.55 (0.016 – 0.022)	0.70 (0.028)
		Oil	0.20 – 0.50 (0.008 – 0.020)	0.80 (0.031)
Piston pin	Diameter		20.994 – 21.000 (0.8265 – 0.8268)	———
	Pin-to-piston clearance		0.010 – 0.022 (0.0004 – 0.0009)	———
Connecting rod	Pin-to-rod interference		0.013 – 0.032 (0.0005 – 0.0013)	———
	Small end bore diameter		20.968 – 20.981 (0.8255 – 0.8260)	———
	Large end bore diameter	Nominal	48.0 (1.89)	———
	End play installed on crankshaft		0.15 – 0.30 (0.006 – 0.012)	0.40 (0.016)
Crankshaft	Main journal diameter			
	No. 1, 2, 4 and 5 journals		54.976 – 55.000 (2.1644 – 2.1654)	———
	No. 3 journal		54.970 – 54.994 (2.1642 – 2.1651)	———
	Rod journal diameter		44.976 – 45.000 (1.7707 – 1.7717)	———
	Journal taper		0.005 (0.0002) max.	0.010 (0.0004)
	Journal out of round		0.004 (0.0002) max.	0.006 (0.0002)
	End play		0.10 – 0.35 (0.004 – 0.014)	0.45 (0.018)
	Total runout		0.020 (0.0008) max.	0.030 (0.0012)
Bearing	Main bearing-to-journal oil clearance			
	No. 1, 2, 4 and 5 journals		0.024 – 0.042 (0.0009 – 0.0017)	0.05 (0.002)
	No. 3 journal		0.030 – 0.048 (0.0012 – 0.0019)	0.06 (0.002)
	Rod bearing-to-journal oil clearance		0.032 – 0.050 (0.0013 – 0.0020)	0.06 (0.002)

Standards and Service Limits

Engine Lubrication — Section 8
Except B16A2 Engine

MEASUREMENT			STANDARD (NEW)	SERVICE LIMIT
Engine oil	Capacity ℓ (US qt, Imp qt)	Except D16A9	4.0 (4.2, 3.5) for engine overhaul 3.3 (3.5, 2.9) for oil change, including filter 3.0 (3.2, 2.6) for oil change, without filter	
		D16A9	4.3 (4.5, 3.8) for engine overhaul 3.5 (3.7, 3.1) for oil change, including filter 3.2 (3.4, 2.8) for oil change, without filter	
Oil pump	Inner-to-outer rotor radial clearance		0.02 – 0.14 (0.001 – 0.006)	0.20 (0.008)
	Pump body-to-outer rotor radial clearance		0.10 – 0.18 (0.004 – 0.007)	0.20 (0.008)
	Pump body-to-rotor axial clearance		0.03 – 0.08 (0.001 – 0.003)	0.15 (0.006)
Relief valve	Pressure setting 80°C (176°F) kPa (kg/cm², psi)	at idle	70 (0.7, 10) min.	
		at 3,000 min⁻¹ (rpm)	350 (3.5, 50) min.	

Engine Lubrication — Section 8
B16A2 Engine

MEASUREMENT			STANDARD (NEW)	SERVICE LIMIT
Engine oil	Capacity ℓ (US qt, Imp qt)		4.8 (5.1, 4.2) for engine disassembly 4.0 (4.2, 3.5) for oil change, including oil filter 3.7 (3.9, 3.3) for oil change, without filter	
Oil pump	Inner-to-outer rotor radial clearance		0.04 – 0.16 (0.002 – 0.006)	0.20 (0.008)
	Pump body-to-rotor radial clearance		0.10 – 0.19 (0.004 – 0.007)	0.20 (0.008)
	Pump body-to-rotor axial clearance		0.02 – 0.07 (0.001 – 0.003)	0.15 (0.006)
Relief valve	Pressure setting 80°C (176°F) kPa (kg/cm²)	at idle	70 (0.7, 10) min.	
		at 3,000 min⁻¹ (rpm)	350 (3.5, 50) min.	

Cooling — Section 10

Unit of length: mm (in)

	MEASUREMENT		STANDARD (NEW)
Radiator	Coolant capacity ℓ (US qt, Imp qt) including engine, heater, cooling line and reservoir Reservoir capacity: 0.4 ℓ (0.42 US qt, 0.35 Imp qt)	M/T	B16A2 4.8 (5.1, 4.2) for overhaul 3.9 (4.1, 3.4) for coolant change Except B16A2, D15Z1 4.5 (4.8, 4.0) for overhaul 3.6 (3.8, 3.2) for coolant change D15Z1 4.4 (4.6, 3.9) for overhaul 3.5 (3.7, 3.1) for coolant change
		A/T	D12B1, D15B2, D15B3, D15B7 4.4 (4.6, 3.9) for overhaul 3.5 (3.7, 3.1) for coolant change D16A9, D16Z6, D16Z7, D16Y1 4.7 (5.0, 4.1) for overhaul 3.8 (4.0, 3.3) for coolant change
Radiator cap	Opening pressure kPa (kg/cm², psi)		95 – 125 (0.95 – 1.25, 14 – 18)
Thermostat	Start to opening °C (°F)	D15Z1	80 – 84 (176 – 183)
		Except D15Z1	76 – 80 (169 – 176)
	Fully open °C (°F)	D15Z1	95 (203)
		Except D15Z1	90 (194)
	Valve lift at fully open		8.0 (0.31) min.
Cooling fan	Thermoswitch "ON" temperature	°C (°F)	91.0 – 95.0 (196 – 203)
	Thermoswitch "OFF" temperature	°C (°F)	Subtract 3 – 8 (5 – 15) from actual "ON" temperature.

Standards and Service Limits

Fuel and Emissions (Carbureted Engine) — Section 11

	MEASUREMENT	STANDARD (NEW)	
Fuel pump	Displacement/60 seconds cm^3 (fl oz, Imp oz) Relief valve opening pressure kPa (kg/cm^2, psi)	833.3 (28.2, 29.4) min. 6.8 – 22.6 (0.07 – 0.23, 1.0 – 3.2) min.	
Fuel tank	Capacity ℓ (US gal, Imp gal)	45 (11.9, 9.9)	
Engine	Idle speed with headlight and cooling fan off min^{-1} (rpm)	**M/T: Neutral**	**A/T: N or P position**
	D12B1, D15B3	800 ± 50	1,000 ± 50
	D13B2, D13B3, D15Z2	800 ± 50	——
	Idle CO %	With CATA 0.5 max. Without CATA 1.0 max.	

Fuel and Emissions (PGM-FI Engine) — Section 11

	MEASUREMENT	STANDARD (NEW)	
Fuel pump	Displacement/10 seconds cm^3 (fl oz, Imp oz) Relief valve opening pressure kPa (kg/cm^2, psi)	120 (4.0, 4.2) min. 450 – 600 (4.5 – 6.0, 64 – 85) min.	
Pressure regulator	Pressure with regulator vacuum hose disconnected kPa (kg/cm^2, psi) D15B2 Except D15B2	245 – 285 (2.45 – 2.85, 35 – 41) 280 – 330 (2.8 – 3.3, 40 – 47)	
Fuel tank	Capacity ℓ (US gal, Imp gal)	45 (11.9, 9.9)	
Engine	Idle speed with headlight and cooling fan off min^{-1} (rpm)	**M/T: Neutral**	**A/T: N or P position**
	D15B2	810 ± 50	810 ± 50
	D15B7	750 ± 50	750 ± 50
	D16A9, D16Z6, D16Z7, D16Y1	750 ± 50	750 ± 50
	D15Z1	700 ± 50	——
	D16A7	710 ± 50	——
	B16A2	750 ± 50	——
	Idle CO %	With CATA 0.1 max. Without CATA 1.0 ± 1.0	

Clutch — Section 12

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Clutch pedal	Pedal height	to floor	164 (6.46)	——
	Stroke		130 – 140 (5.12 – 5.51)	——
	Total free play		12 – 21 (0.5 – 0.8)	——
	Disengagement height	to floor	83 (3.27) min.	——
		to carpet	55 (2.2) min. Reference	——
Flywheel	Clutch surface runout		0.05 (0.002) max.	0.15 (0.006)
Clutch disc	Rivet depth		1.3 (0.051) min.	0.2 (0.008)
	Thickness		8.4 – 9.1 (0.33 – 0.36)	6.0 (0.24)
Pressure plate	Warpage		0.03 (0.001) max.	0.15 (0.006)
	Diaphragm spring finger alignment		0.8 (0.03) max.	1.0 (0.04)

Unit of length: mm (in)

2WD Manual Transmission S20 — Section 13

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Transmission oil	Capacity ℓ (US qt, Imp qt)		1.9 (2.0, 1.7) for overhaul 1.8 (1.9, 1.6) for oil change	
Mainshaft	End play		0.11 – 0.18 (0.004 – 0.007)	Adjust
	Diameter of ball bearing contact area A (Transmission housing side)		21.987 – 22.000 (0.8656 – 0.8661)	21.930 (0.8634)
	Diameter of 4th, 5th gear contact area B		26.980 – 26.993 (1.0622 – 1.0627)	26.930 (1.0602)
	Diameter of 3rd gear contact area C		33.984 – 34.000 (1.3380 – 1.3386)	33.930 (1.3358)
	Diameter of ball bearing contact area D (Clutch housing side)		25.977 – 25.990 (1.0227 – 1.0232)	25.920 (1.0205)
	Runout		0.02 (0.001) max.	0.05 (0.002)
Mainshaft 3rd and 4th gears	I.D.		39.009 – 39.025 (1.5358 – 1.5364)	39.07 (1.538)
	End play	3rd	0.06 – 0.21 (0.002 – 0.008)	0.33 (0.013)
		4th	0.06 – 0.19 (0.002 – 0.007)	0.31 (0.012)
	Thickness	3rd	30.22 – 30.27 (1.190 – 1.192)	30.15 (1.187)
		4th	30.12 – 30.17 (1.186 – 1.188)	30.05 (1.183)
Mainshaft 5th gear	I.D.		37.009 – 37.025 (1.4570 – 1.4577)	37.07 (1.459)
	End play		0.06 – 0.19 (0.002 – 0.007)	0.31 (0.012)
	Thickness		28.42 – 28.47 (1.119 – 1.121)	28.35 (1.116)
Countershaft	Diameter of needle bearing contact area A		30.000 – 30.015 (1.1811 – 1.1817)	29.950 (1.1791)
	Diameter of 1st gear contact area B		35.984 – 36.000 (1.4167 – 1.4173)	35.930 (1.4146)
	Diameter of ball bearing contact area C		24.980 – 24.993 (0.9835 – 0.9840)	24.930 (0.9815)
	Runout		0.02 (0.0008) max.	0.05 (0.002)
Countershaft 1st gear	I.D.		41.009 – 41.025 (1.6145 – 1.6152)	41.07 (1.617)
	End play (When tightened by the specified torque)		0.03 – 0.10 (0.001 – 0.004)	0.22 (0.009)
	Thickness		30.41 – 30.44 (1.197 – 1.198)	30.36 (1.195)
Countershaft 2nd gear	I.D.		44.009 – 44.025 (1.7326 – 1.7333)	44.07 (1.735)
	End play (When tightened by the specified torque)		0.03 – 0.11 (0.001 – 0.004)	0.23 (0.009)
	Thickness		31.92 – 31.97 (1.257 – 1.259)	31.85 (1.254)
Spacer collar (Countershaft 2nd gear)	I.D.		33.000 – 33.010 (1.2992 – 1.2996)	33.05 (1.301)
	O.D.		38.989 – 39.000 (1.5350 – 1.5354)	38.93 (1.533)
	Length		32.03 – 32.06 (1.261 – 1.262)	32.01 (1.260)
Spacer collar (Mainshaft 4th and 5th gear)	I.D.		27.002 – 27.012 (1.0631 – 1.0635)	27.06 (1.065)
	O.D.	4th	33.989 – 34.000 (1.3381 – 1.3386)	33.93 (1.336)
		5th	31.989 – 32.000 (1.2594 – 1.2598)	31.93 (1.257)
	Length	4th	22.83 – 22.86 (0.899 – 0.900)	22.81 (0.898)
		5th	23.53 – 23.56 (0.926 – 0.928)	23.51 (0.926)
Reverse idler gear	I.D.		15.016 – 15.043 (0.5912 – 0.5922)	15.08 (0.594)
	Gear-to-reverse gear shaft clearance		0.032 – 0.077 (0.0013 – 0.0030)	0.14 (0.006)
Synchro ring	Ring-to-gear clearance (Ring pushed against gear)		0.73 – 1.18 (0.029 – 0.046)	0.4 (0.016)
Shift fork	Fork finger thickness		6.4 – 6.5 (0.252 – 0.255)	———
	Fork-to-synchro sleeve clearance		0.25 – 0.45 (0.010 – 0.018)	0.8 (0.032)
Reverse shift fork	Fork pawl groove width		12.7 – 13.0 (0.50 – 0.51)	———
	Fork-to-reverse idler gear clearance		0.5 – 1.1 (0.020 – 0.043)	1.8 (0.071)
	L-groove width		7.05 – 7.25 (0.278 – 0.285)	———
	Fork-to-5th/reverse shift piece pin clearance		0.05 – 0.35 (0.002 – 0.014)	0.5 (0.02)
Shift arm A	Inner diameter of shift arm C contact point		13.05 – 13.13 (0.514 – 0.517)	———
	Shift arm A-to-shift arm C clearance		0.05 – 0.23 (0.002 – 0.009)	0.35 (0.014)
Shift arm B	Inner diameter of shift arm B shaft contact point		13.973 – 14.000 (0.5501 – 0.5512)	———
	Shift arm B-to-shaft clearance		0.013 – 0.070 (0.0005 – 0.0028)	0.16 (0.006)
	Shift arm B-to-shift piece clearance		0.2 – 0.5 (0.008 – 0.020)	0.62 (0.0244)
	Diameter of shift piece contact point		12.9 – 13.0 (0.508 – 0.512)	12.78 (0.5031)

Standards and Service Limits

2WD Manual Transmission Y21 — Section 13

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission oil	Capacity ℓ (US qt, Imp qt)	2.3 (2.4, 2.0) for overhaul 2.2 (2.3, 1.9) for oil change	
Mainshaft	End play	0.11 – 0.18 (0.004 – 0.007)	Adjust
	Diameter of ball bearing contact area A (Clutch housing side)	27.977 – 27.990 (1.1015 – 1.1020)	27.930 (1.0996)
	Diameter of 3rd gear contact area B	37.984 – 38.000 (1.4954 – 1.4960)	37.930 (1.4933)
	Diameter of ball bearing contact area C (Transmission housing side)	27.987 – 28.000 (1.1018 – 1.1024)	27.940 (1.1000)
	Runout	0.02 (0.001) max.	0.05 (0.002)
Mainshaft 3rd and 4th gears	I.D.	43.009 – 43.025 (1.6933 – 1.6939)	43.08 (1.696)
	End play	0.06 – 0.21 (0.002 – 0.008)	0.3 (0.01)
	Thickness 3rd	34.92 – 34.97 (1.375 – 1.377)	34.8 (1.370)
	4th	31.42 – 31.47 (1.237 – 1.239)	31.3 (1.232)
Mainshaft 5th gear	I.D.	43.009 – 43.025 (1.6933 – 1.6939)	43.08 (1.696)
	End play	0.06 – 0.21 (0.002 – 0.008)	0.3 (0.01)
	Thickness	31.42 – 31.47 (1.237 – 1.239)	31.3 (1.232)
Countershaft	Diameter of ball bearing contact area A	24.980 – 24.993 (0.9835 – 0.9840)	24.940 (0.9818)
	Diameter of 1st gear contact area B	36.984 – 37.000 (1.4561 – 1.4567)	36.930 (1.4539)
	Diameter of needle bearing contact area C	33.000 – 33.015 (1.2992 – 1.2998)	32.950 (1.2970)
	Runout	0.02 (0.0008) max.	0.05 (0.002)
Countershaft 1st gear	I.D.	42.009 – 42.025 (1.6539 – 1.6545)	42.08 (1.657)
	End play (When tightened by the specified torque)	0.04 – 0.12 (0.0016 – 0.0047)	0.18 (0.0071)
Countershaft 2nd gear	I.D.	47.009 – 47.025 (1.8507 – 1.8514)	47.08 (1.854)
	End play (When tightened by the specified torque)	0.05 – 0.12 (0.0020 – 0.0047)	0.18 (0.0071)
	Thickness	28.92 – 28.97 (1.1386 – 1.1405)	28.8 (1.134)
Spacer collar (Countershaft 2nd gear)	I.D.	36.48 – 36.49 (1.436 – 1.437)	36.50 (1.437)
	O.D.	41.989 – 42.000 (1.6531 – 1.6535)	41.94 (1.651)
	Length A	29.02 – 29.04 (1.1425 – 1.1433)	——
	B	29.07 – 29.09 (1.1444 – 1.1453)	——
Spacer collar (Mainshaft 4th and 5th gear)	I.D.	31.002 – 31.012 (1.2205 – 1.2209)	31.06 (1.223)
	O.D.	37.989 – 38.000 (1.4956 – 1.4961)	37.94 (1.494)
	Length	56.45 – 56.55 (2.2224 – 2.2264)	——
	4th/5th gear side	26.03 – 26.08 (1.025 – 1.027)	——

Unit of length: mm (in)

2WD Manual Transmission Y21 — Section 13

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Reverse idler gear	I.D.	20.016 – 20.043 (0.7880 – 0.7891)	20.09 (0.7909)
	Gear-to-reverse gear shaft clearance	0.036 – 0.084 (0.0014 – 0.0033)	0.16 (0.006)
Synchro ring	Ring-to-gear clearance (Ring pushed against gear)	0.85 – 1.10 (0.033 – 0.043)	0.4 (0.016)
Double cone synchro ring	Clearance (Ring pushed against gear)		
	Outer synchro ring-to-gear	0.95 – 1.68 (0.037 – 0.066)	0.6 (0.024)
	Inner synchro ring-to-gear	0.5 – 1.0 (0.02 – 0.04)	0.3 (0.01)
	Outer synchro ring-to-synchro cone	0.5 – 1.0 (0.02 – 0.04)	0.3 (0.01)
Shift fork	Fork finger thickness	7.4 – 7.6 (0.291 – 0.299)	———
	Fork-to-synchro sleeve clearance	0.35 – 0.65 (0.015 – 0.026)	1.0 (0.04)
Reverse shift fork	Fork pawl groove width	13.0 – 13.3 (0.512 – 0.524)	———
	Fork-to-reverse idler gear clearance	0.5 – 1.1 (0.02 – 0.04)	1.8 (0.07)
	L-groove width At 5th gear side	7.4 – 7.7 (0.29 – 0.30)	———
	At reverse side	7.05 – 7.25 (0.278 – 0.285)	———
	Fork-to-5th/reverse shift piece pin clearance		
	At 5th gear side	0.4 – 0.9 (0.02 – 0.04)	———
	At reverse side	0.05 – 0.45 (0.002 – 0.018)	———
Shift piece	Shift piece-to-shift arm clearance	0.1 – 0.3 (0.004 – 0.012)	0.6 (0.02)
	Groove width of shift arm contact area	8.1 – 8.2 (0.319 – 0.329)	———
	Shift-piece-to-shift fork shaft clearance	0.2 – 0.5 (0.008 – 0.020)	0.6 (0.02)
	Width of shift fork contact area	11.9 – 12.0 (0.469 – 0.472)	———
Select arm	Select arm-to-interlock clearance	0.05 – 0.25 (0.002 – 0.014)	0.5 (0.02)
	Select arm-to-shim clearance	0.01 – 0.2 (0.0004 – 0.008)	———
Interlock	Width of select arm contact area	9.9 – 10.0 (0.390 – 0.394)	———
Change piece	Change piece-to-shift arm holder clearance	0.05 – 0.35 (0.002 – 0.014)	0.8 (0.03)
	Groove width of shift arm holder contact area	12.05 – 12.15 (0.474 – 0.478)	———
	Change piece-to-select arm clearance	0.05 – 0.35 (0.002 – 0.014)	0.8 (0.03)
	Groove width of select arm contact area	12.05 – 12.15 (0.474 – 0.478)	———

Standards and Service Limits

4WD Manual Transmission S22 — Section 13

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission oil	Capacity ℓ (US qt, Imp qt)	2.8 (3.0, 2.5) for overhaul 2.2 (2.3, 1.9) for oil change	
Mainshaft	End play Diameter of 63/28C ball bearing contact area A Diameter of 3rd gear contact area B Diameter of 6306/25 ball bearing contact area C Diameter of 4th/5th spacer collar contact area Runout	0.11 – 0.18 (0.004 – 0.007) 27.977 – 27.990 (1.1015 – 1.1020) 34.984 – 35.000 (1.3773 – 1.3780) 24.987 – 25.000 (0.9837 – 0.9843) 27.987 – 27.000 (1.1018 – 1.1024) 0.02 (0.001) max.	Adjust 27.920 (1.0992) 34.930 (1.3752) 24.930 (0.9815) 27.930 (1.0996) 0.05 (0.002)
Mainshaft 3rd gear	I.D. End play Thickness	40.009 – 40.025 (1.5752 – 1.5758) 0.06 – 0.21 (0.002 – 0.008) 32.42 – 32.47 (1.276 – 1.278)	40.07 (1.578) 0.3 (0.012) 32.3 (1.272)
Mainshaft 4th gear	I.D. End play Thickness	40.009 – 40.025 (1.5752 – 1.5758) 0.06 – 0.21 (0.002 – 0.008) 30.92 – 30.97 (1.217 – 1.219)	40.07 (1.578) 0.3 (0.012) 30.8 (1.212)
Mainshaft 5th gear	I.D. End play Thickness	40.009 – 40.025 (1.5752 – 1.5758) 0.06 – 0.21 (0.002 – 0.008) 30.42 – 30.47 (1.198 – 1.200)	40.07 (1.578) 0.3 (0.012) 30.3 (1.193)
Countershaft	Diameter of needle bearing contact area A Diameter of 3rd gear contact area B Diameter of ball bearing contact area C Runout	29.000 – 29.015 (1.1417 – 1.1423) 36.464 – 36.480 (1.4356 – 1.4362) 24.987 – 25.000 (0.9837 – 0.9843) 0.02 (0.0008) max.	28.940 (1.1394) 36.41 (1.433) 24.930 (0.9815) 0.05 (0.002)
Countershaft 1st gear	I.D. End play (When tightened by the specified torque) Thickness	50.009 – 50.025 (1.9689 – 1.9695) 0.03 – 0.08 (0.001 – 0.003) 32.95 – 33.00 (1.297 – 1.299)	50.07 (1.971) 0.18 (0.0071) 32.83 (1.293)
Countershaft 2nd gear	I.D. End play (When tightened by the specified torque) Thickness	50.009 – 50.025 (1.9689 – 1.9695) 0.03 – 0.08 (0.001 – 0.003) 32.92 – 32.97 (1.296 – 1.298)	50.07 (1.971) 0.18 (0.0071) 32.8 (1.29)
Mainshaft 4th and 5th gear distance collar	I.D. O.D. Length	28.002 – 28.012 (1.1024 – 1.1028) 34.989 – 35.000 (1.3775 – 1.3780) 26.03 – 26.08 (1.025 – 1.027)	28.06 (1.105) 34.93 (1.024) 26.01 (1.024)
Countershaft 2nd gear distance collar	I.D. O.D. Length	36.48 – 36.49 (1.436 – 1.437) 43.989 – 44.000 (1.7318 – 1.7323) 28.96 – 29.40 (1.140 – 1.157)	36.54 (1.439) 43.93 (1.730) Adjust
Reverse idler gear	I.D. Gear-to-shaft clearance	20.016 – 20.043 (0.7880 – 0.7890) 0.036 – 0.084 (0.0014 – 0.0033)	20.08 (0.791) 0.14 (0.006)
Super-low 1st shaft	Distance of needle bearing contact area	23.984 – 23.993 (0.9443 – 0.9446)	23.93 (0.942)
Super-low 3rd gear	Diameter of needle bearing contact area Width of needle bearing contact area	43.984 – 44.000 (1.7318 – 1.7323) 31.03 – 31.08 (1.222 – 2.224)	43.93 (1.730) 31.01 (1.221)

Unit of length: mm (in)

4WD Manual Transmission S22 — Section 13

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transfer shaft	Diameter of needle bearing contact area	54.000 – 54.015 (2.126 – 3.127)	53.94 (2.124)
	Diameter of taper bearing contact area	16.989 – 17.000 (0.6689 – 0.6693)	16.93 (0.667)
	Diameter of drive bevel gear contact area	24.979 – 25.000 (0.983 – 0.984)	24.92 (0.98)
	Runout	0.02 (0.001)	0.05 (0.002)
Transfer drive bevel gear	I.D.	25.000 – 25.021 (0.9843 – 0.9851)	25.06 (0.987)
	Diameter of taper bearing contact area	35.002 – 35.018 (1.3780 – 1.3787)	34.95 (1.376)
Transfer driven bevel gear	Backlash	0.10 – 0.15 (0.004 – 0.006)	Adjust
	Diameter of taper bearing contact area		
	Transfer driven gear side	35.002 – 35.018 (1.3780 – 1.3787)	34.95 (1.376)
	Locknut side	27.987 – 28.000 (1.1018 – 1.1024)	27.93 (1.100)
Synchro ring	Ring-to-gear clearance (Ring pushed against gear)	0.85 – 1.10 (0.033 – 0.043)	0.4 (0.02)
1st/2nd shift fork and 3rd/4th shift fork	Synchro sleeve groove width	7.95 – 8.05 (0.313 – 0.317)	———
	Shift fork-to-synchro sleeve clearance Thrust	0.45 – 0.65 (0.018 – 0.026)	1.0 (0.04)
	Radial	0.05 – 0.45 (0.002 – 0.018)	0.8 (0.03)
	Shift fork finger thickness	7.4 – 7.5 (0.29 – 0.30)	———
5th shift fork	Synchro sleeve groove width	5.95 – 6.05 (0.234 – 0.238)	———
	Shift fork-to-synchro sleeve clearance Thrust	0.25 – 0.45 (0.010 – 0.018)	0.8 (0.03)
	Radial	0.05 – 0.45 (0.002 – 0.018)	0.8 (0.03)
Reverse shift fork	Fork pawl thickness	13.0 – 13.3 (0.51 – 0.52)	———
	Fork-to-reverse idler gear clearance	0.25 – 0.84 (0.010 – 0.033)	———
	L-groove width	7.05 – 7.25 (0.278 – 0.285)	———
	Fork-to-5th/reverse shift piece pin clearance	0.05 – 0.35 (0.002 – 0.014)	0.5 (0.02)
Shift arm A	Diameter of shift piece contact area	12.9 – 13.0 (0.508 – 0.512)	———
	Shift arm-to-shift piece clearance	0.2 – 0.5 (0.01 – 0.02)	0.7 (0.03)
	I.D.	16.000 – 16.068 (0.6299 – 0.6326)	———
	Shift arm-to-shaft clearance	0.011 – 0.092 (0.0004 – 0.036)	———
Shift arm	Diameter of shift arm A contact area	11.9 – 12.0 (0.469 – 0.472)	———
	Select arm-to-shift arm A clearance	0.05 – 0.25 (0.002 – 0.010)	0.5 (0.02)
Select arm	Diameter of shift arm A contact area	7.95 – 8.00 (0.313 – 0.315)	———
	Select arm-to-shift arm A clearance	0.10 – 0.25 (0.004 – 0.010)	0.5 (0.02)
Super-low shift fork	Synchro sleeve groove width	5.75 – 5.85 (0.226 – 0.230)	———
	Fork-to-synchro sleeve clearance Thrust	0.25 – 0.45 (0.010 – 0.018)	0.8 (0.031)
	Radial	0.05 – 0.45 (0.002 – 0.018)	0.8 (0.031)

Standards and Service Limits

2WD Automatic Transmission M48A — Section 14

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Transmission fluid	Capacity ℓ (US qt, Imp qt)		5.4 (5.7, 4.8) for overhaul 2.4 (2.5, 2.1) for fluid change	
Hydraulic pressure kPa (kg/cm², psi) D12B1	Line pressure at 2,000 min⁻¹ (rpm) [N] or [P] position		800 – 850 (8.0 – 8.5, 114 – 121)	750 (7.5, 107)
	2nd clutch pressure at 2,000 min⁻¹ (rpm) [D4] position		420 (4.2, 60) throttle fully closed | 800 – 850 (8.0 – 8.5, 114 – 121) throttle more than 1/4 opened	370 (3.7, 53) throttle fully closed | 750 (7.5, 107) throttle more than 1/4 opened
	3rd clutch pressure at 2,000 min⁻¹ (rpm) [D4] position			
	4th clutch pressure at 2,000 min⁻¹ (rpm) [D4] position			
	2nd clutch pressure at 2,000 min⁻¹ (rpm) [2] position		800 – 850 (8.0 – 8.5, 114 – 121)	750 (7.5, 107)
	1st clutch pressure at 2,000 min⁻¹ (rpm) [D4] or [D3] position		800 – 850 (8.0 – 8.5, 114 – 121)	750 (7.5, 107)
	Governor pressure at 60 km/h (38 mph)		151 – 161 (1.51 – 1.61, 21 – 23)	146 (1.46, 21)
	Throttle pressure B	Throttle fully closed Throttle fully open	0 800 – 850 (8.0 – 8.5, 114 – 121)	——— 750 (7.5, 107)
	Throttle pressure A	Throttle fully closed Throttle fully open	0 – 5 (0 – 0.05, 0 – 1) 515 – 530 (5.15 – 5.3, 73 – 75)	——— 510 (5.1, 73)
Hydraulic pressure kPa (kg/cm², psi) D15B3	Line pressure at 2,000 min⁻¹ (rpm) [N] or [P] position		850 – 900 (8.5 – 9.0, 121 – 128)	800 (8.0, 114)
	2nd clutch pressure at 2,000 min⁻¹ (rpm) [D4] position		420 (4.2, 60) throttle fully closed | 850 – 900 (8.5 – 9.0, 121 – 128) throttle more than 1/4 opened	370 (3.7, 53) throttle fully closed | 800 (8.0, 114) throttle more than 1/4 opened
	3rd clutch pressure at 2,000 min⁻¹ (rpm) [D4] position			
	4th clutch pressure at 2,000 min⁻¹ (rpm) [D4] position			
	2nd clutch pressure at 2,000 min⁻¹ (rpm) [2] position		850 – 900 (8.5 – 9.0, 121 – 128)	800 (8.0, 114)
	1st clutch pressure at 2,000 min⁻¹ (rpm) [D4] or [D3] position		850 – 900 (8.5 – 9.0, 121 – 128)	800 (8.0, 114)
	Governor pressure at 60 km/h (38 mph)		151 – 161 (1.51 – 1.61, 21 – 23)	146 (1.46, 21)
	Throttle pressure B	Throttle fully closed Throttle fully open	0 800 – 850 (8.0 – 8.5, 114 – 121)	——— 750 (7.5, 107)
	Throttle pressure A	Throttle fully closed Throttle fully open	0 – 5 (0 – 0.05, 0 – 1) 515 – 530 (5.15 – 5.3, 73 – 75)	——— 510 (5.1, 73)

Unit of length: mm (in)

2WD Automatic Transmission M48A (cont'd) — Section 14

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Hydraulic pressure kPa (kg/cm², psi) D16A9	Line pressure at 2,000 min⁻¹ (rpm) [N] or [P] position		850 – 900 (8.5 – 9.0, 121 – 128)	800 (8.0, 114)
	2nd clutch pressure at 2,000 min⁻¹ (rpm) [D4] position		420 (4.2, 60) throttle fully closed ↓ 850 – 900 (8.5 – 9.0, 121 – 128) throttle more than 1/4 opened	370 (3.7, 53) throttle fully closed ↓ 800 (8.0, 114) throttle more than 1/4 opened
	3rd clutch pressure at 2,000 min⁻¹ (rpm) [D4] position			
	4th clutch pressure at 2,000 min⁻¹ (rpm) [D4] position			
	2nd clutch pressure at 2,000 min⁻¹ (rpm) [2] position		850 – 900 (8.5 – 9.0, 121 – 128)	800 (8.0, 114)
	1st clutch pressure at 2,000 min⁻¹ (rpm) [D4] or [D3] position		850 – 900 (8.5 – 9.0, 121 – 128)	800 (8.0, 114)
	Governor pressure at 60 km/h (38 mph)		151 – 161 (1.51 – 1.61, 21 – 23)	146 (1.46, 21)
	Throttle pressure B	Throttle fully closed	0	———
		Throttle fully open	800 – 850 (8.0 – 8.5, 114 – 121)	750 (7.5, 107)
	Throttle pressure A	Throttle fully closed	0 – 5 (0 – 0.05, 0 – 1)	———
		Throttle fully open	495 – 510 (4.95 – 5.1, 70 – 73)	490 (4.9, 70)
Stall speed min⁻¹ (rpm) (check with car on level ground)			2,600	2,300 – 2,900
Clutch	Clutch initial clearance	1st, 2nd	0.65 – 0.85 (0.026 – 0.033)	———
		3rd, 4th	0.40 – 0.60 (0.016 – 0.024)	———
	Clutch return spring free length	1st	31.0 (1.22)	29.0 (1.14)
		2nd, 3rd, 4th	30.5 (1.20)	28.5 (1.12)
	Clutch disc thickness		1.88 – 2.00 (0.074 – 0.079)	Until grooves worn out
	Clutch plate thickness	1st	1.55 – 1.65 (0.061 – 0.065)	Discoloration
		2nd, 3rd, 4th	1.95 – 2.05 (0.077 – 0.081)	Discoloration
	Clutch end plate thickness D12B1, D15B3	MARK 1	2.2 – 2.3 (0.087 – 0.091)	Discoloration ↕ Discoloration
		MARK 2	2.5 – 2.6 (0.098 – 0.102)	
		MARK 3	2.8 – 2.9 (0.110 – 0.114)	
		MARK 4	3.1 – 3.2 (0.122 – 0.126)	
		MARK 5	3.4 – 3.5 (0.134 – 0.138)	
		MARK 11	2.05 – 2.15 (0.081 – 0.085)	
		MARK 12	2.35 – 2.45 (0.093 – 0.096)	
		MARK 13	2.65 – 2.75 (0.104 – 0.108)	
		MARK 14	2.95 – 3.05 (0.116 – 0.120)	
		MARK 15	3.25 – 3.35 (0.128 – 0.132)	
		MARK 16	3.55 – 3.65 (0.140 – 0.144)	
	Clutch end plate thickness D16A9	MARK 1	2.3 – 2.4 (0.091 – 0.094)	Discoloration ↕ Discoloration
		MARK 2	2.4 – 2.5 (0.094 – 0.098)	
		MARK 3	2.5 – 2.6 (0.098 – 0.102)	
		MARK 4	2.6 – 2.7 (0.102 – 0.106)	
		MARK 5	2.7 – 2.8 (0.106 – 0.110)	
		MARK 6	2.8 – 2.9 (0.110 – 0.114)	
		MARK 7	2.9 – 3.0 (0.114 – 0.118)	
		MARK 8	3.0 – 3.1 (0.118 – 0.122)	
		MARK 9	3.1 – 3.2 (0.122 – 0.126)	
		MARK 10	3.2 – 3.3 (0.126 – 0.130)	
		MARK 11	2.0 – 2.1 (0.079 – 0.083)	
		MARK 12	2.1 – 2.2 (0.083 – 0.087)	
		MARK 13	2.2 – 2.3 (0.087 – 0.091)	

(cont'd)

Standards and Service Limits

2WD Automatic Transmission M48A (cont'd) — Section 14

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission	Diameter of needle bearing contact area		
	On mainshaft and stator shaft	19.980 – 19.993 (0.7866 – 0.7871)	Wear or damage
	On mainshaft 2nd gear	35.975 – 35.991 (1.4163 – 1.4169)	↕
	On mainshaft 4th gear collar	31.975 – 31.991 (1.2589 – 1.2595)	↕
	On mainshaft 1st gear collar	27.975 – 27.995 (1.1014 – 1.1022)	↕
	On countershaft (L. side)	36.004 – 36.017 (1.4175 – 1.4180)	↕
	On countershaft 3rd gear distance collar	31.975 – 31.991 (1.2589 – 1.2595)	↕
	On countershaft 4th gear	27.980 – 27.993 (1.1016 – 1.1021)	↕
	On countershaft reverse gear collar	29.980 – 29.993 (1.1803 – 1.1808)	↕
	On countershaft 1st gear collar	29.980 – 29.993 (1.1803 – 1.1808)	↕
	On reverse idler gear shaft	13.990 – 14.000 (0.5508 – 0.5512)	↕
	On mainshaft 1st gear	33.000 – 33.016 (1.2992 – 1.2998)	Wear or damage
	Inside diameter of needle bearing contact area		
	On mainshaft 2nd gear	41.000 – 41.016 (1.6142 – 1.6148)	Wear or damage
	On mainshaft 4th gear	38.000 – 38.016 (1.4961 – 1.4967)	↕
	On countershaft 1st gear	35.000 – 35.016 (1.3780 – 1.3786)	↕
	On countershaft 3rd gear	38.000 – 38.016 (1.4961 – 1.4967)	↕
	On countershaft 4th gear	33.000 – 33.016 (1.2992 – 1.2998)	↕
	On countershaft reverse gear	36.000 – 36.016 (1.4173 – 1.4179)	↕
	On reverse idler gear	18.007 – 18.020 (0.7089 – 0.7094)	↕
	On stator shaft (R. side)	26.000 – 26.013 (1.0236 – 1.0241)	↕
	On stator shaft (stator side)	24.000 – 24.021 (0.9449 – 0.9457)	↕
	On reverse idler shaft holder	14.416 – 14.434 (0.5676 – 0.5683)	Wear or damage
	End play		
	Mainshaft 1st gear	0.08 – 0.24 (0.003 – 0.009)	—
	Mainshaft 2nd gear	0.07 – 0.15 (0.003 – 0.006)	—
	Mainshaft 4th gear	0.10 – 0.22 (0.004 – 0.009)	—
	Countershaft 1st gear	0.10 – 0.45 (0.004 – 0.018)	—
	Countershaft 3rd gear	0.07 – 0.15 (0.003 – 0.006)	—
	Countershaft 4th gear	0.07 – 0.15 (0.003 – 0.006)	—
	Reverse idler gear	0.05 – 0.18 (0.002 – 0.007)	—
	Countershaft reverse gear	0.10 – 0.45 (0.004 – 0.018)	—
	Selector hub O.D.	51.87 – 51.90 (2.042 – 2.043)	Wear or damage
	Mainshaft 4th gear collar length	40.00 – 40.05 (1.5748 – 1.5768)	—
	Mainshaft 1th gear collar length	25.00 – 25.15 (0.9843 – 0.9902)	—
	Mainshaft 1th gear collar flange thickness	2.5 – 2.6 (0.098 – 0.102)	Wear or damage
	Countershaft distance collar length	38.97 – 39.00 (1.534 – 1.535)	—
		39.02 – 39.05 (1.536 – 1.537)	—
		39.07 – 39.10 (1.538 – 1.539)	—
		39.12 – 39.15 (1.540 – 1.541)	—
		39.17 – 39.20 (1.542 – 1.543)	—
		39.22 – 39.25 (1.544 – 1.545)	—
		39.27 – 39.30 (1.546 – 1.547)	—
		38.87 – 38.90 (1.530 – 1.531)	—
		38.92 – 38.95 (1.532 – 1.533)	—
	Countershaft reverse gear collar length	14.5 – 14.55 (0.571 – 0.573)	—
	Countershaft reverse gear collar flange thickness	2.45 – 2.55 (0.096 – 0.100)	Wear or damage
	Countershaft 1st gear collar length	14.50 – 14.55 (0.571 – 0.573)	—
	Countershaft 1st gear collar flange thickness	2.45 – 2.55 (0.096 – 0.100)	Wear or damage

Unit of length: mm (in)

2WD Automatic Transmission M48A (cont'd) — Section 14

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission (cont'd)	Mainshaft 2nd gear thrust washer thickness	3.47 – 3.50 (0.137 – 0.138) 3.52 – 3.55 (0.139 – 0.140) 3.57 – 3.60 (0.141 – 0.142) 3.62 – 3.65 (0.143 – 0.144) 3.67 – 3.70 (0.145 – 0.146) 3.72 – 3.75 (0.147 – 0.148) 3.77 – 3.80 (0.148 – 0.150) 3.82 – 3.85 (0.151 – 0.152) 3.87 – 3.90 (0.153 – 0.154)	Wear or damage ↕ Wear or damage
	Thrust washer thickness Mainshaft 4th gear Mainshaft ball bearing L. side Mainshaft 1st gear L. side Mainshaft 1st gear R. side	 4.45 – 4.55 (0.175 – 0.179) 2.95 – 3.05 (0.116 – 0.120) 1.45 – 1.50 (0.057 – 0.057) 2.43 – 2.50 (0.096 – 0.098)	 Wear or damage ↕ Wear or damage
	Countershaft 3rd gear splined washer thickness	2.87 – 2.90 (0.113 – 0.114) 2.92 – 2.95 (0.115 – 0.116) 2.97 – 3.00 (0.117 – 0.118) 3.02 – 3.05 (0.119 – 0.120) 3.07 – 3.10 (0.121 – 0.122) 3.12 – 3.15 (0.123 – 0.124) 3.17 – 3.20 (0.125 – 0.126) 3.22 – 3.25 (0.127 – 0.128) 3.27 – 3.30 (0.129 – 0.130) 3.32 – 3.35 (0.131 – 0.132) 3.37 – 3.40 (0.133 – 0.134)	Wear or damage ↕ Wear or damage
	Mainshaft 4th gear thrust washer thickness One-way clutch contact area I.D. Countershaft 1st gear Parking gear Mainshaft feed pipe A, O.D. Mainshaft feed pipe B, O.D. Countershaft feed pipe O.D. Mainshaft sealing ring thickness Mainshaft bushing I.D. Mainshaft bushing I.D. Countershaft bushing I.D. Mainshaft sealing ring groove width	2.93 – 3.00 (0.115 – 0.118) 74.414 – 74.440 (2.930 – 2.931) 57.755 – 57.768 (2.2738 – 2.2743) 8.97 – 8.98 (0.353 – 0.354) 5.97 – 5.98 (0.2350 – 0.2354) 7.97 – 7.98 (0.3138 – 0.3142) 1.980 – 1.995 (0.0780 – 0.0785) 6.018 – 6.030 (0.2369 – 0.2374) 9.000 – 9.015 (0.3543 – 0.3549) 8.000 – 8.015 (0.3150 – 0.3156) 2.025 – 2.060 (0.0797 – 0.081)	Wear or damage ↕ Wear or damage 8.95 (0.352) 5.95 (0.234) 7.95 (0.313) 1.80 (0.071) 6.045 (0.2380) 9.030 (0.355) 8.030 (0.3161) 2.080 (0.082)
Regulator valve body	Sealing ring contact I.D.	32.000 – 32.025 (1.260 – 1.261)	32.05 (1.262)
Shifting device and parking brake control	Reverse shift fork finger thickness Parking brake ratchet pawl Parking brake gear Throttle cam stopper height	5.90 – 6.00 (0.232 – 0.236) ——— ——— 18.5 – 18.6 (0.728 – 0.732)	5.40 (0.213) Wear or other defect ———
Servo body	Shift fork shaft bore I.D. A B C Shift fork shaft valve bore I.D.	14.000 – 14.005 (0.5512 – 0.5514) 14.006 – 14.010 (0.5514 – 0.5516) 14.011 – 14.015 (0.5516 – 0.5518) 37.000 – 37.039 (1.4567 – 1.4582)	——— ——— ——— 37.045 (1.4585)
Oil pump	Oil pump gear side clearance Oil pump gear-to-body clearance Drive Driven Oil pump driven gear I.D. Oil pump shaft O.D.	0.03 – 0.05 (0.001 – 0.002) 0.240 – 0.266 (0.009 – 0.010) 0.063 – 0.088 (0.002 – 0.003) 14.016 – 14.034 (0.5518 – 0.5525) 13.980 – 13.990 (0.5504 – 0.5508)	0.07 (0.003) ——— ——— Wear or damage Wear or damage

(cont'd)

Standards and Service Limits

2WD Automatic Transmission M48A (cont'd) — Section 14

	MEASUREMENT		STANDARD (NEW)			
			Wire Dia.	O.D.	Free Length	No. of Coils
Spring	2nd orifice control valve spring	D12B1/D15B3	0.9 (0.035)	6.6 (0.260)	41.2 (1.622)	22.0
		D16A9	0.9 (0.035)	6.6 (0.260)	45.1 (1.776)	22.0
	3-4 shift valve spring		0.7 (0.028)	9.6 (0.378)	32.9 (1.295)	6.4
	3-4 shift valve ball spring		0.45 (0.018)	4.5 (0.177)	12.0 (0.472)	6.7
	Cooler relief valve spring		1.1 (0.043)	8.4 (0.331)	36.4 (1.433)	12.0
	Relief valve spring		1.0 (0.039)	8.4 (0.331)	33.8 (1.331)	12.5
	2-3 shift valve spring		0.7 (0.028)	7.6 (0.299)	43.0 (1.693)	12.7
	2-3 shift valve ball spring		0.4 (0.016)	4.5 (0.177)	14.7 (0.579)	7.3
	1-2 shift valve spring		0.5 (0.020)	4.5 (0.177)	44.5 (1.752)	35.1
	1-2 shift valve ball spring		0.4 (0.016)	4.5 (0.177)	11.3 (0.445)	8.0
	Regulator valve spring A	D12B1/D15B3	1.8 (0.071)	14.7 (0.579)	86.5 (3.406)	16.5
		D16A9	1.8 (0.071)	14.7 (0.579)	88.1 (3.468)	16.5
	Regulator valve spring B		1.8 (0.071)	9.6 (0.378)	44.0 (1.732)	7.5
	Stator reaction spring		5.5 (0.217)	*26.4 (1.039)	30.3 (1.193)	2.1
	Lock-up control valve spring	D12B1/D15B3	0.7 (0.028)	6.6 (0.260)	32.5 (1.280)	14.0
		D16A9	0.6 (0.024)	6.6 (0.260)	32.8 (1.291)	15.8
	Torque converter check valve spring		1.1 (0.043)	8.4 (0.331)	36.4 (1.433)	12.0
	Modulator valve spring	D12B1/D15B3	1.2 (0.047)	*7.0 (0.276)	26.3 (1.035)	8.0
			1.2 (0.047)	*7.0 (0.276)	27.2 (1.071)	8.0
		D16A9	1.2 (0.047)	*7.0 (0.276)	26.3 (1.035)	8.0
			1.2 (0.047)	*7.0 (0.276)	26.4 (1.039)	8.0
	Throttle valve A spring	D12B1/D15B3	1.1 (0.043)	8.5 (0.335)	22.3 (0.878)	8.1
			1.1 (0.043)	8.5 (0.335)	22.3 (0.878)	7.6
			1.0 (0.039)	8.5 (0.335)	22.2 (0.874)	6.0
			1.0 (0.039)	8.5 (0.335)	22.1 (0.870)	5.5
		D16A9	1.0 (0.039)	8.5 (0.335)	22.2 (0.874)	6.0
			1.0 (0.039)	8.5 (0.335)	22.1 (0.870)	5.5
			1.0 (0.039)	8.5 (0.335)	22.5 (0.886)	7.3
			1.0 (0.039)	8.5 (0.335)	22.3 (0.878)	6.6
	Throttle valve A adjusting spring		0.8 (0.031)	6.2 (0.244)	27.0 (1.063)	8.5
	Throttle valve B spring	D12B1/D15B3	1.4 (0.055)	8.5 (0.335)	41.5 (1.634)	10.5
			1.4 (0.055)	8.5 (0.335)	41.5 (1.634)	11.2
			1.4 (0.055)	8.5 (0.335)	41.6 (1.638)	12.4
		D16A9	1.6 (0.063)	8.5 (0.335)	41.3 (1.626)	13.9
			1.6 (0.063)	8.5 (0.335)	41.4 (1.630)	11.7
			1.6 (0.063)	8.5 (0.335)	41.3 (1.626)	13.0

*: Inside Diameter

Unit of length: mm (in)

2WD Automatic Transmission M48A (cont'd) — Section 14

	MEASUREMENT		STANDARD (NEW)			
			Wire Dia.	O.D.	Free Length	No. of Coils
Spring	Throttle valve B adjusting spring		0.8 (0.031)	6.2 (0.244)	30.0 (1.181)	8.0
	3rd accumulator spring		2.8 (0.110)	15.5 (0.610)	82.5 (3.248)	17.4
	2nd accumulator spring	D12B1/D15B3 D16A9	3.8 (0.150) 3.8 (0.150)	20.2 (0.795) 20.2 (0.795)	75.3 (2.965) 75.1 (2.957)	10.8 9.8
	4th accumulator spring		3.2 (0.126)	18.6 (0.732)	82.7 (3.256)	12.0
	Reverse timing valve spring		0.7 (0.028)	5.6 (0.220)	43.8 (1.724)	21.7
	Servo control valve spring		1.0 (0.039)	7.6 (0.299)	39.4 (1.551)	18.2
	Lock-up shift valve spring	D12B1/D15B3 D16A9	0.7 (0.028) 1.1 (0.043)	8.1 (0.319) 8.1 (0.319)	39.0 (1.535) 51.8 (2.039)	15.4 22.3
	Lock-up timing valve spring		1.0 (0.039)	6.6 (0.260)	52.3 (2.059)	30.1
	Governor spring A		1.0 (0.039)	18.8 (0.740)	20.4 (0.803)	4.0
	Governor spring B		0.8 (0.031) 0.8 (0.031)	11.8 (0.465) 11.8 (0.465)	30.9 (1.217) 26.7 (1.051)	6.0 6.0
	Kick-down valve spring		1.3 (0.051)	10.1 (0.398)	33.2 (1.307)	10.3
	Orifice control valve spring	D12B1/D15B3 D16A9	0.8 (0.031) 0.9 (0.035)	6.1 (0.240) 6.1 (0.240)	36.2 (1.425) 36.0 (1.417)	14.6 19.8
	Shift timing valve spring		0.9 (0.035)	8.6 (0.339)	42.9 (1.689)	21.4
	4th exhaust valve spring		0.9 (0.035)	6.1 (0.240)	43.7 (1.720)	20.3
	Accumulator control valve spring	D12B1/D15B3 D16A9	1.2 (0.047) 1.2 (0.047)	8.6 (0.339) 8.6 (0.339)	46.9 (1.846) 45.6 (1.795)	15.2 14.7
	Lock-up cut valve spring		0.7 (0.028)	7.6 (0.299)	29.0 (1.142)	18.0
	Reverse control valve spring		0.7 (0.028)	7.6 (0.229)	37.2 (1.465)	15.3
	CPC (Clutch Pressure Control) valve spring		0.9 (0.035)	8.6 (0.339)	18.2 (0.717)	5.54
	1st accumulator one-way ball spring		0.29 (0.011)	4.0 (0.157)	14.0 (0.551)	13.0
	1st accumulator spring A		2.9 (0.114)	21.5 (0.846)	58.8 (2.315)	7.3
	1st accumulator spring B		2.3 (0.091)	7.5 (0.295)	39.0 (1.535)	5.6

Standards and Service Limits

2WD Automatic Transmission M24A — Section 14

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission fluid	Capacity ℓ (US qt, Imp qt)	5.9 (6.2, 5.2) for overhaul 2.7 (2.8, 2.4) for fluid change	
Hydraulic pressure kPa (kg/cm², psi) D16Z6, D16Y1	Line pressure at 2,000 min⁻¹ (rpm) [N] or [P] position	850 – 900 (8.5 – 9.0, 121 – 128)	800 (8.0, 114)
	2nd clutch pressure at 2,000 min⁻¹ (rpm) [D4] position	400 (4.0, 57) throttle fully closed | 850 – 900 (8.5 – 9.0, 121 – 128) throttle more than 1/8 opened	350 (3.5, 50) throttle fully closed | 800 (8.0, 114) throttle more than 1/8 opened
	3rd clutch pressure at 2,000 min⁻¹ (rpm) [D4] position		
	4th clutch pressure at 2,000 min⁻¹ (rpm) [D4] position		
	2nd clutch pressure at 2,000 min⁻¹ (rpm) [2] position	850 – 900 (8.5 – 9.0, 121 – 128)	800 (8.0, 114)
	1st clutch pressure at 2,000 min⁻¹ (rpm) [D4] or [1] position	850 – 900 (8.5 – 9.0, 121 – 128)	800 (8.0, 114)
	Governor pressure at 60 km/h (38 mph)	182 – 192 (1.82 – 1.92, 26 – 27)	177 (1.77, 25)
	Throttle B pressure — Trottle fully closed	0 – 15 (0 – 0.15, 0 – 2)	———
	Throttle B pressure — Trottle fully open	850 – 900 (8.5 – 9.0, 121 – 128)	800 (8.0, 114)
	Throttle A pressure — Trottle fully closed	0 – 5 (0 – 0.05, 0 – 1)	———
	Throttle A pressure — Trottle fully open	485 – 500 (4.85 – 5.00, 69 – 71)	480 (4.8, 68)
Hydraulic pressure kPa (kg/cm², psi) D15B2, D15B7	Line pressure at 2,000 min⁻¹ (rpm) [N] or [P] position	800 – 850 (8.0 – 8.5, 114 – 121)	750 (7.5, 107)
	2nd clutch pressure at 2,000 min⁻¹ (rpm) [D4] position	400 (4.0, 57) throttle fully closed | 800 – 850 (8.0 – 8.5, 114 – 121) throttle more than 1/8 opened	350 (3.5, 50) throttle fully closed | 750 (7.5, 107) throttle more than 1/8 opened
	3rd clutch pressure at 2,000 min⁻¹ (rpm) [D4] position		
	4th clutch pressure at 2,000 min⁻¹ (rpm) [D4] position		
	2nd clutch pressure at 2,000 min⁻¹ (rpm) [2] position	800 – 850 (8.0 – 8.5, 114 – 121)	750 (7.5, 107)
	1st clutch pressure at 2,000 min⁻¹ (rpm) [D4] or [1] position	800 – 850 (8.0 – 8.5, 114 – 121)	750 (7.5, 107)
	Governor pressure at 60 km/h (38 mph)	182 – 192 (1.82 – 1.92, 26 – 27)	177 (1.77, 25)
	Throttle B pressure — Trottle fully closed	0 – 15 (0 – 0.15, 0 – 2)	———
	Throttle B pressure — Trottle fully open	800 – 850 (8.0 – 8.5, 114 – 121)	750 (7.5, 107)
	Throttle A pressure D15B2 — Trottle fully closed	0 – 5 (0 – 0.05, 0 – 1)	———
	Throttle A pressure D15B2 — Trottle fully open	515 – 530 (5.15 – 5.30, 73 – 75)	510 (5.1, 73)
	Throttle A pressure D15B7 — Trottle fully closed	0 – 5 (0 – 0.05, 0 – 1)	———
	Throttle A pressure D15B7 — Trottle fully open	485 – 500 (4.85 – 5.00, 69 – 71)	480 (4.8, 68)
Stall speed min⁻¹ (rpm) (check with car on level ground)		2,600	2,400 – 2,800

Unit of length: mm (in)

2WD Automatic Transmission M24A (cont'd) — Section 14

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Clutch	Clutch initial clearance	1st, 2nd	0.65 – 0.85 (0.026 – 0.033)	———
		3rd, 4th	0.40 – 0.60 (0.016 – 0.024)	———
		1st-hold	0.5 – 0.8 (0.02 – 0.03)	———
	Clutch return spring free length	1st	31.0 (1.22)	29.0 (1.14)
		2nd, 3rd, 4th	30.5 (1.20)	28.5 (1.12)
		1st-hold	34.6 (1.36)	32.6 (1.28)
	Clutch disc thickness		1.88 – 2.00 (0.074 – 0.079)	Until grooves worn out
	Clutch plate thickness	1st	1.55 – 1.65 (0.061 – 0.065)	Discoloration
		Except 1st	1.95 – 2.05 (0.077 – 0.081)	Discoloration
	Clutch end plate thickness (except 1st-hold)	MARK 1	2.3 – 2.4 (0.091 – 0.094)	Discoloration
		MARK 2	2.4 – 2.5 (0.094 – 0.098)	↕
		MARK 3	2.5 – 2.6 (0.098 – 0.102)	↕
		MARK 4	2.6 – 2.7 (0.102 – 0.106)	↕
		MARK 5	2.7 – 2.8 (0.106 – 0.110)	↕
		MARK 6	2.8 – 2.9 (0.110 – 0.114)	↕
		MARK 7	2.9 – 3.0 (0.114 – 0.118)	↕
		MARK 8	3.0 – 3.1 (0.118 – 0.122)	↕
		MARK 9	3.1 – 3.2 (0.122 – 0.126)	↕
		MARK 10	3.2 – 3.3 (0.126 – 0.130)	↕
		MARK 11	2.0 – 2.1 (0.079 – 0.083)	↕
		MARK 12	2.1 – 2.2 (0.083 – 0.087)	↕
		MARK 13	2.2 – 2.3 (0.087 – 0.091)	Discoloration
	Clutch end plate thickness (1st-hold)	MARK 1	2.05 – 2.10 (0.081 – 0.083)	Discoloration
		MARK 2	2.15 – 2.20 (0.085 – 0.087)	↕
		MARK 3	2.25 – 2.30 (0.089 – 0.091)	↕
		MARK 4	2.35 – 2.40 (0.093 – 0.094)	↕
		NO MARK	2.45 – 2.50 (0.096 – 0.098)	↕
		MARK 6	2.55 – 2.60 (0.100 – 0.102)	↕
		MARK 7	2.65 – 2.70 (0.104 – 0.106)	Discoloration

(cont'd)

Standards and Service Limits

2WD Automatic Transmission M24A (cont'd) — Section 14

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission	Diameter of needle bearing contact area		
	On mainshaft and stator shaft	22.980 – 22.993 (0.9047 – 0.9052)	Wear or damage
	On mainshaft 2nd gear	35.975 – 35.991 (1.4163 – 1.4169)	
	On mainshaft 4th gear collar	31.975 – 31.991 (1.2589 – 1.2595)	
	On mainshaft 1st gear collar	30.975 – 30.991 (1.2195 – 1.2201)	
	On countershaft (L. side)	36.004 – 36.017 (1.4175 – 1.4180)	
	On countershaft 3rd gear	31.980 – 31.996 (1.2590 – 1.2600)	
	On countershaft 4th gear	27.980 – 27.993 (1.1016 – 1.1021)	
	On countershaft reverse gear collar	31.975 – 31.991 (1.2589 – 1.2595)	
	On countershaft 1st gear collar	31.975 – 31.991 (1.2589 – 1.2595)	
	On subshaft (L. side)	25.991 – 26.000 (1.0233 – 1.0236)	
	On subshaft 4th gear collar	27.980 – 27.993 (1.1016 – 1.1021)	
	On reverse idler gear shaft	13.990 – 14.000 (0.5508 – 0.5512)	
	On mainshaft 1st gear	35.000 – 35.016 (1.3780 – 1.3786)	
	On mainshaft 2nd gear	41.000 – 41.016 (1.6142 – 1.6148)	
	On mainshaft 4th gear	38.000 – 38.016 (1.4961 – 1.4967)	
	On countershaft 1st gear	38.000 – 38.016 (1.4961 – 1.4967)	Wear or damage
	Inside diameter of needle bearing contact area		
	On countershaft 3rd gear	38.000 – 38.016 (1.4961 – 1.4967)	Wear or damage
	On countershaft 4th gear	33.000 – 33.016 (1.2992 – 1.2998)	
	On countershaft reverse gear	38.000 – 38.016 (1.4961 – 1.4967)	
	On subshaft 4th gear	32.000 – 32.016 (1.2598 – 1.2605)	
	On reverse idler gear	18.007 – 18.020 (0.7089 – 0.7094)	
	On stator shaft (R. side)	29.000 – 29.013 (1.1417 – 1.1422)	
	On stator shaft (stator side)	27.000 – 27.021 (1.0630 – 1.0638)	
	On reverse idler gear shaft holder	14.416 – 14.434 (0.5676 – 0.5683)	Wear or damage
	End play		
	Mainshaft 1st gear	0.08 – 0.24 (0.003 – 0.009)	———
	Mainshaft 2nd gear	0.05 – 0.13 (0.002 – 0.0051)	———
	Mainshaft 4th gear	0.05 – 0.135 (0.002 – 0.0053)	———
	Countershaft 1st gear	0.1 – 0.5 (0.004 – 0.020)	———
	Countershaft 3rd gear	0.05 – 0.13 (0.002 – 0.0051)	———
	Countershaft 4th gear	0.05 – 0.13 (0.002 – 0.0051)	———
	Subshaft 4th gear	0.05 – 0.17 (0.002 – 0.007)	———
	Reverse idler gear	0.05 – 0.18 (0.002 – 0.007)	———
	Countershaft reverse gear	0.10 – 0.25 (0.004 – 0.010)	———
	Selector hub O.D.	51.87 – 51.90 (2.042 – 2.043)	Wear or damage
	Mainshaft 4th gear collar length	45.00 – 45.03 (1.772 – 1.773)	———
	Mainshaft 1st gear collar length	27.00 – 27.15 (1.063 – 1.069)	———
	Mainshaft 1st gear collar flange thickness	2.5 – 2.6 (2.098 – 2.102)	Wear or damage
	Countershaft distance collar length (28 mm)	38.97 – 39.00 (1.534 – 1.535)	———
		39.02 – 39.05 (1.536 – 1.537)	———
		39.07 – 39.10 (1.538 – 1.539)	———
		39.12 – 39.15 (1.540 – 1.541)	———
		39.17 – 39.20 (1.542 – 1.543)	———
		39.22 – 39.25 (1.544 – 1.545)	———
		39.27 – 39.30 (1.546 – 1.547)	———
		38.87 – 38.90 (1.530 – 1.531)	———
		38.92 – 38.95 (1.532 – 1.533)	———
	Countershaft reverse gear collar length	14.5 – 14.6 (0.571 – 0.575)	———
	Countershaft reverse gear collar flange thickness	2.4 – 2.6 (0.094 – 0.102)	Wear or damage
	Countershaft 1st gear collar length	14.5 – 14.6 (0.571 – 0.575)	———
	Countershaft 1st gear collar flange thickness	2.4 – 2.6 (0.094 – 0.102)	Wear or damage
	Subshaft 4th gear collar length	24.0 – 24.1 (0.945 – 0.949)	Wear or damage
	Subshaft 4th gear collar flange thickness	3.00 – 3.15 (0.118 – 0.124)	Wear or damage

2WD Automatic Transmission M24A (cont'd) — Section 14

Unit of length: mm (in)

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission (cont'd)	Mainshaft 2nd gear thrust washer thickness	3.47 – 3.50 (0.137 – 0.138) 3.52 – 3.55 (0.139 – 0.140) 3.57 – 3.60 (0.141 – 0.142) 3.62 – 3.65 (0.143 – 0.144) 3.67 – 3.70 (0.145 – 0.146) 3.72 – 3.75 (0.147 – 0.148) 3.77 – 3.80 (0.148 – 0.150) 3.82 – 3.85 (0.151 – 0.152) 3.87 – 3.90 (0.153 – 0.154)	Wear or damage ↕ Wear or damage
	Thrust washer thickness Mainshaft 4th gear Mainshaft ball bearing L. side Mainshaft 1st gear L. side Mainshaft 1st gear R. side	 4.45 – 4.55 (0.175 – 0.179) 3.45 – 3.55 (0.136 – 0.140) 1.45 – 1.50 (0.057 – 0.059) 3.43 – 3.50 (0.135 – 0.138)	 Wear or damage ↕ Wear or damage
	Countershaft 3rd gear thrust washer thickness (35 x 52 mm)	2.97 – 3.00 (0.117 – 0.118) 3.02 – 3.05 (0.119 – 0.120) 3.07 – 3.10 (0.121 – 0.122) 3.12 – 3.15 (0.123 – 0.124) 3.17 – 3.20 (0.125 – 0.126) 3.22 – 3.25 (0.127 – 0.128) 3.27 – 3.30 (0.129 – 0.130) 3.32 – 3.35 (0.131 – 0.132) 3.37 – 3.40 (0.133 – 0.134) 3.42 – 3.45 (0.135 – 0.136) 3.47 – 3.50 (0.137 – 0.138) 3.52 – 3.55 (0.139 – 0.140) 3.57 – 3.60 (0.141 – 0.142)	Wear or damage ↕ Wear or damage
	Subshaft 4th gear thrust washer thickness One-way clutch contact area I.D. Countershaft 1st gear Parking gear Mainshaft feed pipe A, O.D. Mainshaft feed pipe B, O.D. Countershaft feed pipe O.D. Subshaft feed pipe O.D. Mainshaft sealing ring thickness (29 mm and 35 mm) Mainshaft bushing I.D. Mainshaft bushing I.D. Countershaft bushing I.D. Subshaft bushing I.D. Mainshaft sealing ring groove width	2.93 – 3.00 (0.115 – 0.118) 83.339 – 83.365 (3.2810 – 3.2821) 66.685 – 66.698 (2.6254 – 2.6259) 8.97 – 8.98 (0.353 – 0.354) 5.97 – 5.98 (0.2350 – 0.2354) 7.97 – 7.98 (0.3138 – 0.3142) 7.97 – 7.98 (0.3138 – 0.3142) 1.980 – 1.995 (0.0780 – 0.0785) 6.018 – 6.030 (0.2369 – 0.2374) 9.000 – 9.015 (0.3543 – 0.3549) 8.000 – 8.015 (0.3150 – 0.3156) 8.000 – 8.015 (0.3150 – 0.3156) 2.025 – 2.060 (0.080 – 0.081)	Wear or damage ↕ Wear or damage 8.95 (0.352) 5.95 (0.234) 7.95 (0.313) 7.95 (0.313) 1.80 (0.071) 6.045 (0.2380) 9.030 (0.355) 8.030 (0.3161) 8.030 (0.3161) 2.080 (0.082)
Regulator valve body	Sealing ring contact I.D.	35.000 – 35.025 (1.3780 – 1.3782)	35.050 (1.3799)
Shifting device and parking brake control	Reverse shift fork finger thickness Parking brake ratchet pawl Parking brake gear Throttle cam stopper height	5.90 – 6.00 (0.232 – 0.236) ——— ——— 27.0 – 27.1 (1.063 – 1.067)	5.40 (0.213) Wear or other defect ——— ———
Servo body	Shift fork shaft bore I.D. Shift fork shaft valve bore I.D.	14.000 – 14.010 (0.5512 – 0.5516) 37.000 – 37.039 (1.4567 – 1.4582)	——— 37.045 (1.4585)
Oil pump	Oil pump gear side clearance — Drive Driven Oil pump gear-to-body clearance — Drive Driven Oil pump driven gear I.D. Oil pump shaft O.D.	0.03 – 0.05 (0.001 – 0.002) 0.04 – 0.06 (0.0016 – 0.0024) 0.210 – 0.265 (0.0083 – 0.0104) 0.070 – 0.125 (0.0028 – 0.0049) 14.016 – 14.034 (0.5518 – 0.5525) 13.980 – 13.990 (0.5504 – 0.5508)	0.07 (0.003) 0.07 (0.003) ——— ——— Wear or damage Wear or damage

(cont'd)

Standards and Service Limits

2WD Automatic Transmission M24A (cont'd) — Section 14

	MEASUREMENT	STANDARD (NEW)			
		Wire Dia.	O.D.	Free Length	No. of Coils
Springs	Regulator valve spring A D16Y1, D16Z6	1.8 (0.07)	14.7 (0.58)	88.1 (3.468)	16.5
	Regulator valve spring A D15B2, D15B7	1.8 (0.07)	14.7 (0.58)	86.5 (3.406)	16.5
	Regulator valve spring B	1.8 (0.07)	9.6 (0.38)	44.0 (1.73)	7.5
	Stator reaction spring	5.5 (0.22)	*26.4 (1.04)	30.3 (1.19)	2.1
	Torque converter check valve spring	1.0 (0.04)	8.4 (0.33)	33.8 (1.33)	8.2
	Modulator valve spring	1.2 (0.047)	*7.0 (0.276)	27.2 (1.071)	8.0
	Australia model and Czecho/Slovakia D16Z6 engine model	1.2 (0.047)	*7.0 (0.276)	26.3 (1.035)	8.0
	Relief valve spring	1.1 (0.04)	8.6 (0.34)	37.1 (1.46)	13.4
	Cooler check valve spring	1.0 (0.04)	8.4 (0.33)	33.8 (1.33)	8.2
	Governor spring A	1.0 (0.04)	18.8 (0.74)	32.9 (1.30)	4.1
	Governor spring B	0.9 (0.04)	11.8 (0.47)	27.8 (1.09)	6.0
		0.9 (0.04)	11.8 (0.47)	29.1 (1.15)	6.0
	2 – 3 orifice control valve spring	0.9 (0.04)	6.6 (0.26)	33.2 (1.31)	14.9
	1 – 3 kick down valve spring	1.0 (0.04)	6.6 (0.26)	29.9 (1.18)	14.7
	2/3 – 4 orifice control valve spring	1.0 (0.04)	8.6 (0.34)	51.9 (2.04)	19.8
	2nd ON orifice control valve spring	0.9 (0.04)	8.0 (0.31)	24.1 (0.95)	9.6
	Throttle valve A spring	1.0 (0.04)	8.5 (0.33)	22.2 (0.87)	6.0
	Throttle valve A spring	1.0 (0.04)	8.5 (0.33)	22.1 (0.87)	5.5
	Throttle valve A spring	1.1 (0.04)	8.5 (0.33)	22.3 (0.87)	8.1
	Throttle valve A spring	1.1 (0.04)	8.5 (0.33)	22.3 (0.87)	7.6
	Throttle valve B adjusting spring	0.8 (0.03)	6.2 (0.24)	30 (1.18)	8
	Throttle valve A adjusting spring	0.8 (0.03)	6.2 (0.24)	27 (1.06)	8.5
	Throttle valve B spring	1.4 (0.06)	8.5 (0.33)	41.5 (1.63)	10.5
	Throttle valve B spring	1.4 (0.06)	8.5 (0.33)	41.5 (1.63)	11.2
	Throttle valve B spring	1.4 (0.06)	8.5 (0.33)	41.6 (1.64)	12.4
	1 – 2 shift valve spring	0.45 (0.018)	5.1 (0.20)	52.8 (2.08)	29
	1 – 2 shift valve ball spring	0.45 (0.018)	4.5 (0.18)	10.7 (0.42)	12.7
	2 – 3 shift valve spring	0.9 (0.04)	7.1 (0.28)	65.3 (2.57)	32.1
	2 – 3 shift valve ball spring	0.45 (0.018)	4.5 (0.18)	13.3 (0.52)	8.0
	3 – 4 shift valve spring	0.9 (0.04)	9.6 (0.38)	32.5 (1.28)	10.3
	3 – 4 shift valve ball spring	0.5 (0.02)	4.5 (0.18)	11.3 (0.44)	7.4
	1st-hold accumulator spring	4.0 (0.16)	21.5 (0.85)	71.7 (2.82)	8.3
	1st accumulator spring A	2.6 (0.10)	24.3 (0.96)	101.9 (4.01)	11.6
	1st accumulator spring B	2.3 (0.09)	9.9 (0.39)	49.0 (1.93)	4.6
	2nd accumulator spring	3.5 (0.14)	22 (0.87)	77.0 (3.03)	9.5
	3rd accumulator spring	2.6 (0.10)	17.5 (0.69)	91.8 (3.61)	15.8
	4th accumulator spring	2.6 (0.10)	16 (0.63)	90.1 (3.55)	15.6
	Lock-up shift valve spring	0.9 (0.04)	7.6 (0.30)	73.7 (2.90)	32
	Lock-up timing valve spring	0.8 (0.03)	6.6 (0.26)	61.5 (2.42)	27.6
	Lock-up control valve spring	0.9 (0.04)	6.6 (0.26)	38.4 (1.51)	23.3
	Governor cut valve spring	0.8 (0.03)	7.6 (0.30)	44.5 (1.75)	17
	CPC valve spring	0.9 (0.04)	8.4 (0.33)	24.9 (0.98)	9.8
	Reverse control valve spring	0.6 (0.02)	7.1 (0.28)	40 (1.57)	10.0
	3 – 2 timing valve spring	1.2 (0.05)	8.6 (0.34)	45.6 (1.80)	14.7
	Servo control valve spring	0.9 (0.04)	6.4 (0.25)	34.1 (1.34)	17.5
	2 – 1 timing valve spring	0.6 (0.02)	5.6 (0.22)	33 (1.30)	11.0
	4th exhaust valve spring	0.9 (0.04)	6.6 (0.26)	43.3 (1.70)	22

*: Inside Diameter

4WD Automatic Transmission M25A — Section 14

Unit of length: mm (in)

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Transmission fluid	Capacity ℓ (US qt, Imp qt)		6.4 (6.8, 5.6) for overhaul 3.2 (3.4, 2.8) or fluid change	
Hydraulic pressure kPa (kg/cm², psi)	Line pressure at 2,000 min⁻¹ (rpm) [N] or [P] position		850 – 900 (8.5 – 9.0, 121 – 128)	800 (8.0, 114)
	2nd clutch pressure at 2,000 min⁻¹ (rpm) [D4] position		500 (5.0, 71) throttle fully closed | 850 – 900 (8.5 – 9.0, 121 – 128) throttle more than 3/8 opened	450 (4.5, 61) throttle fully closed | 800 (8.0, 114) throttle more than 3/8 opened
	3rd clutch pressure at 2,000 min⁻¹ (rpm) [D4] position			
	4th clutch pressure at 2,000 min⁻¹ (rpm) [D4] position			
	2nd clutch pressure at 2,000 min⁻¹ (rpm) [2] position		850 – 900 (8.5 – 9.0, 121 – 128)	800 (8.0, 114)
	1st clutch pressure at 2,000 min⁻¹ (rpm) [D4] or [1] position		850 – 900 (8.5 – 9.0, 121 – 128)	800 (8.0, 114)
	1st-hold clutch pressure at 2,000 min⁻¹ (rpm) [1] position		850 – 900 (8.5 – 9.0, 121 – 128)	800 (8.0, 114)
	Throttle B pressure	Throttle fully closed Throttle fully open	0 850 – 900 (8.5 – 9.0, 121 – 128)	——— 800 (8.0, 114)
Stall speed min⁻¹ (rpm) (check with car on level ground)			2,600	2,300 – 2,900
Clutch	Clutch initial clearance	1st, 2nd 3rd, 4th 1st-hold	0.65 – 0.85 (0.026 – 0.033) 0.40 – 0.60 (0.016 – 0.024) 0.5 – 0.8 (0.02 – 0.03)	——— ——— ———
	Clutch return spring free length	1st 2nd, 3rd, 4th 1st-hold	31.0 (1.22) 30.5 (1.20) 34.6 (1.36)	29.0 (1.14) 28.5 (1.12) 32.6 (1.28)
	Clutch disc thickness		1.88 – 2.00 (0.074 – 0.079)	Until grooves worn out
	Clutch plate thickness	1st Except 1st	1.55 – 1.65 (0.061 – 0.065) 1.95 – 2.05 (0.077 – 0.081)	Discoloration Discoloration
	Clutch end plate thickness *(except 1st-hold)*	MARK 1 MARK 2 MARK 3 MARK 4 MARK 5 MARK 6 MARK 7 MARK 8 MARK 9 MARK 10 MARK 11 MARK 12 MARK 13	2.3 – 2.4 (0.091 – 0.094) 2.4 – 2.5 (0.094 – 0.098) 2.5 – 2.6 (0.098 – 0.102) 2.6 – 2.7 (0.102 – 0.106) 2.7 – 2.8 (0.106 – 0.110) 2.8 – 2.9 (0.110 – 0.114) 2.9 – 3.0 (0.114 – 0.118) 3.0 – 3.1 (0.118 – 0.122) 3.1 – 3.2 (0.122 – 0.126) 3.2 – 3.3 (0.126 – 0.130) 2.0 – 2.1 (0.079 – 0.083) 2.1 – 2.2 (0.083 – 0.087) 2.2 – 2.3 (0.087 – 0.091)	Discoloration ↕ Discoloration
	Clutch end plate thickness (1st-hold)	MARK 1 MARK 2 MARK 3 MARK 4 NO MARK MARK 6 MARK 7	2.05 – 2.10 (0.081 – 0.083) 2.15 – 2.20 (0.085 – 0.087) 2.25 – 2.30 (0.089 – 0.091) 2.35 – 2.40 (0.093 – 0.094) 2.45 – 2.50 (0.096 – 0.098) 2.55 – 2.60 (0.100 – 0.102) 2.65 – 2.70 (0.104 – 0.106)	Discoloration ↕ Discoloration

(cont'd)

Standards and Service Limits

4WD Automatic Transmission M25A (cont'd) — Section 14

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission	Diameter of needle bearing contact area		
	On mainshaft and stator shaft	19.980 – 19.993 (0.7866 – 0.7871)	Wear or damage
	On mainshaft 2nd gear	35.975 – 35.991 (1.4163 – 1.4169)	↕
	On mainshaft 4th gear collar	31.975 – 31.991 (1.2589 – 1.2595)	↕
	On mainshaft 1st gear collar	30.975 – 30.991 (1.2195 – 1.2201)	↕
	On countershaft (L. side)	36.004 – 36.017 (1.4175 – 1.4180)	↕
	On countershaft 3rd gear distance collar	31.975 – 31.991 (1.2589 – 1.2595)	↕
	On countershaft 4th gear	27.980 – 27.993 (1.1016 – 1.1021)	↕
	On countershaft reverse gear collar	29.980 – 29.993 (1.1803 – 1.1808)	↕
	On countershaft 1st gear collar	31.975 – 31.991 (1.2589 – 1.2595)	↕
	On subshaft (L. side)	27.991 – 28.000 (1.1020 – 1.1024)	↕
	On subshaft 4th gear collar	29.980 – 29.993 (1.1803 – 1.1808)	↕
	On reverse idler gear shaft	13.990 – 14.000 (0.5508 – 0.5512)	Wear or damage
	Inside diameter of needle bearing contact area		
	On mainshaft 1st gear	36.000 – 36.016 (1.4173 – 1.4179)	Wear or damage
	On mainshaft 2nd gear	41.000 – 41.016 (1.6142 – 1.6148)	↕
	On mainshaft 4th gear	38.000 – 38.016 (1.4961 – 1.4967)	↕
	On countershaft 1st gear	38.000 – 38.016 (1.4961 – 1.4967)	↕
	On countershaft 3rd gear	38.000 – 38.016 (1.4961 – 1.4967)	↕
	On countershaft 4th gear	33.000 – 33.016 (1.2992 – 1.2998)	↕
	On countershaft reverse gear	36.000 – 36.016 (1.4173 – 1.4179)	↕
	On subshaft 4th gear	35.000 – 35.016 (1.3780 – 1.3786)	↕
	On reverse idler gear	18.007 – 18.020 (0.7089 – 0.7094)	↕
	On stator shaft (R. side)	26.000 – 26.013 (1.0236 – 1.0241)	↕
	On stator shaft (stator side)	24.000 – 24.021 (0.9449 – 0.9457)	↕
	On reverse idler gear shaft holder	14.416 – 14.434 (0.5676 – 0.5683)	Wear or damage
	End play		
	Mainshaft 1st gear	0.08 – 0.24 (0.003 – 0.009)	———
	Mainshaft 2nd gear	0.07 – 0.15 (0.003 – 0.006)	———
	Mainshaft 4th gear	0 – 0.08 (0 – 0.003)	———
	Countershaft 1st gear	0.1 – 0.45 (0.004 – 0.018)	———
	Countershaft 3rd gear	0.07 – 0.15 (0.003 – 0.006)	———
	Countershaft 4th gear	0.07 – 0.15 (0.003 – 0.006)	———
	Reverse idler gear	0.05 – 0.18 (0.002 – 0.007)	———
	Countershaft reverse gear	0.1 – 0.45 (0.004 – 0.018)	———
	Selector hub O.D.	51.87 – 51.90 (2.042 – 2.043)	Wear or damage
	Mainshaft 4th gear collar length	46.50 – 46.53 (1.8307 – 1.8319)	———
	Mainshaft 1st gear collar length	24.50 – 24.55 (0.9646 – 0.9665)	———
	Mainshaft 1st gear collar flange thickness	2.5 – 2.6 (0.098 – 0.102)	Wear or damage
	Countershaft distance collar length	38.97 – 39.00 (1.534 – 1.535)	———
		39.02 – 39.05 (1.536 – 1.537)	———
		39.07 – 39.10 (1.538 – 1.539)	———
		39.12 – 39.15 (1.540 – 1.541)	———
		39.17 – 39.20 (1.542 – 1.543)	———
		39.22 – 39.25 (1.544 – 1.545)	———
		39.27 – 39.30 (1.546 – 1.547)	———
		38.87 – 38.90 (1.530 – 1.531)	———
		38.92 – 38.95 (1.532 – 1.533)	———
	Countershaft reverse gear collar length	14.5 – 14.55 (0.5709 – 0.5728)	———
	Countershaft reverse gear collar flange thickness	2.45 – 2.55 (0.096 – 0.100)	Wear or damage
	Countershaft 1st gear collar length	14.5 – 14.55 (0.5709 – 0.5728)	———
	Countershaft 1st gear collar flange thickness	2.45 – 2.55 (0.096 – 0.100)	Wear or damage
	Subshaft 4th gear collar length	24.0 – 24.1 (0.945 – 0.949)	Wear or damage
	Subshaft 4th gear collar length of needle bearing contact area	21.0 – 21.1 (0.8268 – 0.8307)	Wear or damage

Unit of length: mm (in)

4WD Automatic Transmission M25A (cont'd) — Section 14

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission (cont'd)	Mainshaft 2nd gear thrust washer thickness	3.47 – 3.50 (0.137 – 0.138) 3.52 – 3.55 (0.139 – 0.140) 3.57 – 3.60 (0.141 – 0.142) 3.62 – 3.65 (0.143 – 0.144) 3.67 – 3.70 (0.145 – 0.146) 3.72 – 3.75 (0.147 – 0.148) 3.77 – 3.80 (0.148 – 0.150) 3.82 – 3.85 (0.151 – 0.152) 3.87 – 3.90 (0.153 – 0.154)	Wear or damage ↕ Wear or damage
	Thrust washer thickness Mainshaft 4th gear Mainshaft ball bearing L. side Mainshaft 1st gear L. side Mainshaft 1st gear R. side	 4.45 – 4.55 (0.175 – 0.179) 2.95 – 3.05 (0.1161 – 0.1201) 1.45 – 1.50 (0.057 – 0.059) 2.43 – 2.50 (0.096 – 0.098)	 Wear or damage ↕ Wear or damage
	Countershaft 3rd gear thrust washer thickness	2.87 – 2.90 (0.113 – 0.114) 2.92 – 2.95 (0.115 – 0.116) 2.97 – 3.00 (0.117 – 0.118) 3.02 – 3.05 (0.119 – 0.120) 3.07 – 3.10 (0.121 – 0.122) 3.12 – 3.15 (0.123 – 0.124) 3.17 – 3.20 (0.125 – 0.126) 3.22 – 3.25 (0.127 – 0.128) 3.27 – 3.30 (0.129 – 0.130) 3.32 – 3.35 (0.131 – 0.132) 3.37 – 3.40 (0.133 – 0.134)	Wear or damage ↕ Wear or damage
	Mainshaft 4th gear thrust washer thickness One-way clutch contact area I.D. Countershaft 1st gear Parking gear Mainshaft feed pipe A, O.D. Mainshaft feed pipe B, O.D. Countershaft feed pipe O.D. Subshaft feed pipe O.D. Mainshaft sealing ring thickness Mainshaft bushing I.D. Mainshaft bushing I.D. Countershaft bushing I.D. Subshaft bushing I.D. Mainshaft sealing ring groove width	2.93 – 3.00 (0.115 – 0.118) 83.339 – 83.365 (3.2810 – 3.2821) 66.685 – 66.698 (2.6254 – 2.6259) 8.97 – 8.98 (0.353 – 0.354) 5.97 – 5.98 (0.2350 – 0.2354) 7.97 – 7.98 (0.3138 – 0.3142) 5.97 – 5.98 (0.2350 – 0.2354) 1.980 – 1.995 (0.0780 – 0.0785) 6.018 – 6.030 (0.2369 – 0.2374) 9.000 – 9.015 (0.3543 – 0.3549) 8.000 – 8.015 (0.3150 – 0.3156) 6.018 – 6.030 (0.2369 – 0.2374) 2.025 – 2.060 (0.080 – 0.081)	Wear or damage ↕ Wear or damage 8.95 (0.352) 5.95 (0.234) 7.95 (9.313) 5.95 (0.2343) 1.80 (0.071) 6.045 (0.2380) 9.030 (0.355) 8.030 (0.3161) 6.045 (0.2380) 2.080 (0.082)
Regulator valve body	Sealing ring contact I.D.	35.000 – 35.025 (1.3780 – 1.3782)	35.050 (1.3799)
Shifting device and parking brake control	Reverse shift fork finger thickness Parking brake ratchet pawl Parking brake gear Throttle cam stopper height	5.90 – 6.00 (0.232 – 0.236) ——— ——— 27.0 – 27.1 (1.063 – 1.067)	5.40 (0.213) Wear or other defect ——— ———
Servo body	Shift fork shaft bore I.D. A B C Shift fork shaft valve bore I.D.	14.000 – 14.005 (0.5512 – 0.5514) 14.006 – 14.010 (0.5514 – 0.5516) 14.011 – 14.015 (0.5516 – 0.5518) 37.000 – 37.039 (1.4567 – 1.4582)	——— ——— ——— 37.045 (1.4585)
Oil pump	Oil pump gear side clearance Oil pump gear-to-body clearance Drive Driven Oil pump driven gear I.D. Oil pump shaft O.D.	0.03 – 0.05 (0.001 – 0.002) 0.240 – 0.266 (0.009 – 0.010) 0.063 – 0.088 (0.002 – 0.003) 14.016 – 14.034 (0.5518 – 0.5525) 13.980 – 13.990 (0.5504 – 0.5508)	0.07 (0.003) ——— ——— Wear or damage Wear or damage

(cont'd)

Standards and Service Limits

4WD Automatic Transmission M25A (cont'd) — Section 14

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transfer shaft	Diameter of needle bearing contact area	54.000 – 54.015 (2.126 – 2.127)	53.94 (2.124)
	Diameter of taper bearing contact area	16.989 – 17.000 (0.6689 – 0.6693)	16.93 (0.667)
	Diameter of drive bevel gear contact area	24.979 – 25.000 (0.983 – 0.984)	24.92 (0.98)
	Runout	0.02 (0.001) max	0.05 (0.002)
Transfer drive bevel gear	I.D.	25.000 – 25.021 (0.9843 – 0.9851)	25.06 (0.987)
	Diameter of taper bearing contact area	35.002 – 35.018 (1.3780 – 1.3787)	34.95 (1.376)
Transfer driven bevel gear	Backlash	0.10 – 0.15 (0.004 – 0.006)	Adjust with shim
	Diameter of taper bearing contact area — Transfer driven gear side	35.002 –35.018 (1.3780 – 1.3787)	34.95 (1.376)
	Diameter of taper bearing contact area — Locknut side	27.987 – 28.000 (1.1018 –1.1024)	27.93 (1.100)

	MEASUREMENT	STANDARD (NEW)			
		Wire Dia.	O.D.	Free Length	No. of Coils
Springs	Regulator valve spring A	1.8 (0.07)	14.7 (0.58)	88.1 (3.488)	16.5
	Regulator valve spring B	1.8 (0.07)	9.6 (0.38)	44.0 (1.73)	7.5
	Stator reaction spring	5.5 (0.22)	26.4 (1.039)*	30.3 (1.19)	2.1
	Torque converter check valve spring	1.1 (0.04)	8.4 (0.33)	36.4 (1.43)	12
	Relief valve spring	1.0 (0.04)	8.4 (0.33)	33.8 (1.33)	12.5
	2nd orifice control valve spring	0.8 (0.03)	6.6 (0.26)	38.5 (1.52)	28
	Servo orifice control valve spring	0.9 (0.04)	6.1 (0.24)	35.9 (1.41)	20
	Throttle control valve B spring	1.6 (0.06)	8.5 (0.33)	41.3 (1.63)	13.9
	Throttle control valve B adjuster spring	0.8 (0.03)	6.2 (0.24)	30.0 (1.18)	8
	1 – 2 shift valve spring	0.9 (0.04)	8.6 (0.34)	40.4 (1.59)	14.5
	2 – 3 shift valve spirng	0.8 (0.03)	8.6 (0.34)	35.8 (1.41)	10.6
	3 – 4 shift valve spring	0.8 (0.03)	7.6 (0.30)	59.7 (2.35)	22.7
	1st accumulator spring	2.0 (0.08)	13.7 (0.54)	71.3 (2.81)	8.0/11.0
	1st-hold accumulator spring	3.2 (0.13)	24.3 (0.96)	59.5 (2.34)	5.8
	4th accumulator spring	3.1 (0.12)	18.6 (0.73)	81.0 (3.19)	13.4
	2nd accumulator spring	2.7 (0.11)	16.1 (0.63)	88.4 (3.48)	16.0
	3rd accumulator spring	2.8 (0.11)	15.5 (0.61)	78.7 (3.10)	15
	Lock-up control valve spring	0.8 (0.03)	6.6 (0.26)	47.9 (1.89)	25.1
	Lock-up timing B valve spring	0.9 (0.04)	5.6 (0.22)	43.6 (1.72)	30.1
	CPC valve spring	1.4 (0.06)	9.4 (0.37)	33.0 (1.30)	10.5
	Lock-up shift valve spring	1.1 (0.04)	8.1 (0 32)	51.0 (2.01)	21.3
	4 – 2 kick down valve spring	0.9 (0.04)	6.4 (0.25)	42.7 (1.68)	20.8
	Cooler relief valve spring	1.1 (0.04)	8.4 (0.33)	36.4 (1.43)	12
	Modulator valve spring	0.9 (0.04)	8.6 (0.34)	18.2 (0.72)	5.54
	Servo control valve spring	1.0 (0.04)	8.1 (0.32)	42.0 (1.65)	16.5
	4th exhaust valve spring	0.9 (0.04)	6.6 (0.26)	37.0 (1.46)	18.7
	4 – 3 kick down valve spring	0.9 (0.04)	6.4 (0.25)	42.7 (1.68)	20.8

*: Inside diameter

Unit of length: mm (in)

Differential 2WD M/T S20 — Section 15

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Final driven gear	Backlash	0.07 – 0.130 (0.0028 – 0.0051)	0.180 (0.0071)
Differential carrier	Pinion shaft bore diameter	18.000 – 18.018 (0.7087 – 0.7094)	———
	Carrier-to-pinion shaft clearance	0.013 – 0.047 (0.0005 – 0.0019)	0.095 (0.004)
	Driveshaft bore diameter	26.025 – 26.045 (1.0246 – 1.0254)	———
		28.025 – 28.045 (1.1033 – 1.1041)	———
	Carrier-to-driveshaft clearance	0.045 – 0.086 (0.0018 – 0.0034)	0.14 (0.006)
Differential pinion gear	Backlash	0.05 – 0.15 (0.002 – 0.006)	———
	Pinion gear bore diameter	18.042 – 18.066 (0.7103 – 0.7113)	———
	Pinion gear-to-pinion shaft clearance	0.055 – 0.095 (0.0021 – 0.0037)	0.15 (0.006)
Set ring-to-bearing outer race		0 – 0.1 (0 – 0.004)	Adjust with shim

Differential 2WD M/T Y21 — Section 15

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Final driven gear	Backlash	0.090 – 0.148 (0.0035 – 0.0058)	0.200 (0.008)
Differential carrier	Pinion shaft bore diameter	18.000 – 18.016 (0.7087 – 0.7093)	———
	Carrier-to-pinion shaft clearance	0.013 – 0.045 (0.001 – 0.002)	0.10 (0.004)
	Driveshaft bore diameter	28.000 – 28.021 (1.1024 – 1.1032)	———
	Carrier-to-driveshaft clearance	0.025 – 0.066 (0.0010 – 0.0026)	0.12 (0.005)
Differential pinion gear	Backlash	0.05 – 0.15 (0.002 – 0.006)	———
	Pinion gear bore diameter	18.042 – 18.066 (0.710 – 0.711)	———
	Pinion gear-to-pinion shaft clearance	0.055 – 0.095 (0.002 – 0.004)	0.15 (0.006)
Set ring-to-bearing outer race		0 – 0.10 (0 – 0.004)	Adjust with shim

Differential 2WD A/T M48A — Section 15

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Final driven gear	Backlash	0.082 – 0.137 (0.0032 – 0.0054)	0.2 (0.0079)
Differential carrier	Pinion shaft bore diameter	15.000 – 15.018 (0.5906 – 0.5913)	———
	Carrier-to-pinion shaft clearance	0.016 – 0.052 (0.0006 – 0.0020)	0.1 (0.004)
	Driveshaft bore diameter	26.005 – 26.025 (1.0238 – 1.0246)	———
	Carrier-to-driveshaft clearance	0.025 – 0.063 (0.0010 – 0.0026)	0.12 (0.005)
Differential pinion gear	Backlash	0.05 – 0.15 (0.002 – 0.006)	———
	Pinion gear bore diameter	15.041 – 15.061 (0.5922 – 0.5930)	———
	Pinion gear-to-pinion shaft clearance	0.057 – 0.095 (0.0022 – 0.0037)	0.15 (0.006)
Set ring-to-bearing outer race		0 – 0.15 (0 – 0.006)	Adjust with shim

Standards and Service Limits

Differential 2WD A/T M24A — Section 15

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Final driven gear	Backlash	0.071 – 0.129 (0.0028 – 0.0051)	———
Differential carrier	Pinion shaft contact area I.D.	18.000 – 18.018 (15.8382 – 15.8540)	———
	Carrier-to-pinion clearance	0.013 – 0.047 (0.0005 – 0.0019)	0.10 (0.004)
	Driveshaft contact area I.D.	26.005 – 26.025 (1.0238 – 1.0246)	———
	Carrier-to-driveshaft clearance	0.025 – 0.066 (0.0010 – 0.0026)	0.12 (0.005)
	Ball bearing contact area O.D.	40.002 – 40.018 (1.5749 – 1.5755)	———
Differential pinion gear	Backlash	0.05 – 0.15 (0.002 – 0.006)	———
	I.D.	18.041 – 18.061 (0.7103 – 0.7111)	———
	Pinion gear-to-pinion shaft clearance	0.054 – 0.090 (0.0021 – 0.0035)	0.15 (0.006)
Set ring-to-bearing outer race		0 – 0.15 (0 – 0.006)	Adjust

Front Differential 4WD Transmission — Section 15

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Final driven gear	Backlash	0.071 – 0.129 (0.0030 – 0.0050)	———
Differential carrier	Pinion shaft bore diameter	18.000 – 18.018 (0.7087 – 0.7094)	———
	Carrier-to-pinion shaft clearance	0.016 – 0.052 (0.0006 – 0.0020)	0.1 (0.004)
	Drivershaft bore diameter	28.005 – 28.021 (1.1024 – 1.1032)	———
	Carrier-to-driveshaft clearance	0.025 – 0.066 (0.0010 – 0.0026)	0.12 (0.005)
	Ball bearing bore diameter	40.002 – 40.018 (1.5749 – 1.5755)	———
Differential pinion gear	Backlash	0.05 – 0.15 (0.002 – 0.006)	———
	Pinion gear bore diameter	18.042 – 18.066 (0.7103 – 0.7112)	———
	Pinion gear-to-pinion shaft clearance	0.059 – 0.095 (0.0023 – 0.0037)	0.15 (0.006)
Set ring-to-bearing outer race	M/T	0 – 0.10 (0 – 0.004)	Adjust
	A/T	0 – 0.15 (0 – 0.006)	

Rear Differential 4WD Transmission — Section 15

	MEASUREMENT	STANDARD (NEW)
Differential carrier assembly	Oil capacity	1.2 ℓ (1.3 US qt, 1.1 Imp qt) for overhaul 1.0 ℓ (1.1 US qt, 0.9 Imp qt) for oil change

Unit of length: mm (in)

Steering — Section 17

	MEASUREMENT		STANDARD (NEW)
Steering wheel	Play at steering wheel circumference		0 – 10 (0 – 0.4)
	Starting load at steering wheel circumference N (kg, lb)		
	Manual steering		13 – 18 (1.3 – 1.8, 2.87 – 3.97)
	Power steering Engine running	LHD	Except B16A2: 30 (3.0, 6.6) B16A2: 25 (2.5, 5.5)
		RHD	25 (2.5, 5.5)
Gearbox	Angle of rack guide screw loosened from locked position	M/S	50 ± 10°
		P/S LHD	20 $^{+5°}_{0°}$
		RHD	25° max.
	Preload at pinion gear shaft N·m (kg-cm, lb-in)	M/S	0.5 – 1.7 (5 – 17, 4.3 – 14.8)
		P/S	0.6 – 1.1 (6 – 11, 5.21 – 9.55)
Pump	Pump pressure with valve closed (oil temp./speed: 40°C (105°F) min./idle. Do not run for more than 5 seconds). kPa (kg/cm, psi)	LHD	8,000 – 9,000 (80 – 90, 1,138 – 1,280)
		RHD	5,500 – 6,500 (55 – 65, 782 – 924)
Power steering fluid	Recommended power steering fluid		HONDA Power Steering Fluid V
	Fluid capacity	System LHD	1.1 (1.16, 0.97)
	ℓ (US qt, Imp qt)	RHD	1.0 (1.06, 0.88)
		Reservoir	0.4 (0.42, 0.35)
Power steering belt*	Deflection with 100 N (10 kg, 22 lbs) between pulleys	Except D16A9	8.0 – 12.0 (0.31 – 0.47) with used belt 6.0 – 9.5 (0.24 – 0.37) with new belt
		D16A9	5.5 – 9.0 (0.22 – 0.35) with new belt
	Tension measured with belt tension gauge N (kg, lbs)	Except D16A9	350 – 500 (35 – 50, 77 – 110) with used belt 500 – 700 (50 – 70, 110 – 154) with new belt
		D16A9	550 – 750 (55 – 75, 121 – 165) with new belt

M/S: Manual steering, P/S: Power steering

*: When using a new belt, adjust deflection or tension to new values. Run the engine for 5 minutes then turn it off. Readjust the deflection or tension to used belt values.

Standards and Service Limits

Suspension — Section 18

	MEASUREMENT			STANDARD (NEW)	SERVICE LIMIT
Wheel alignment	B16A2	Camber	Front	−0°05′ ± 1°	———
			Rear	−0°25′ ± 1°	———
		Caster	Front	1°10′ ± 1°	———
		Total toe	Front	0 ± 2.0 (0 ± 0.08)	———
			Rear	2.0 $^{+2.0}_{-1.0}$ (0.08 $^{+0.08}_{-0.04}$)	———
		Front wheel turning angle	Inward wheel	36° ± 2°	———
			Outward wheel	30°30′	———
	2WD except B16A2				
		Camber	Front	0°00′ ± 1°	———
			Rear	− 0°20′ ± 1°	———
		Caster	Front	1°10′ ± 1°	———
		Total toe	Front	0 ± 2.0 (0 ± 0.08)	———
			Rear	2.0 $^{+2.0}_{-1.0}$ (0.08 $^{+0.08}_{-0.04}$)	———
		Front wheel turning angle	Inward wheel	41° ± 2°	———
			Outward wheel	33°30′	———
	4WD	Camber	Front	0°15′ ± 1°	———
			Rear	−0°25′± 1°	———
		Caster	Front	1°05′ ± 1°	———
		Total toe	Front	0 ± 2.0 (0 ± 0.08)	———
			Rear		
			without ABS	2.0 $^{+2.0}_{-1.0}$ (0.08 $^{+0.08}_{-0.04}$)	———
			with ABS	0 $^{+1.0}_{-2.0}$ (0 $^{+0.04}_{-0.08}$)	———
		Front wheel turning angle	Inward wheel	41° ± 2°	———
			Outward wheel	33°30′	———
Wheel	Rim runout	Aluminum wheel	Axial	0 – 0.7 (0 – 0.03)	2.0 (0.08)
			Radial	0 – 0.7 (0 – 0.03)	1.5 (0.06)
		Steel wheel	Axial	0 – 1.0 (0 – 0.04)	2.0 (0.08)
			Radial	0 – 1.0 (0 – 0.04)	1.5 (0.06)
Wheel bearing	End play		Front	0 – 0.05 (0 – 0.002)	———
			Rear	0 – 0.05 (0 – 0.002)	———

Unit of length: mm (in)

Brakes — Section 19

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Parking brake lever	Play in stroke at 200 N (20 kg, 44 lbs) lever force		To be locked when pulled 6 – 10 notches	———
Foot brake pedal	Pedal height (with floor mat removed)	M/T A/T	160 (6.30) 165 (6.50)	——— ———
	Free play		1 – 5 (1/16 – 13/64)	———
Master cylinder	Piston-to-pushrod clearance		0 – 0.4 (0 – 0.016)	———
Disc brake	Disc thickness	Front D13B2, D13B3 3D Rear	21 (0.827) 17 (0.67) 9 (0.35)	19 (0.748) 15 (0.59) 8 (0.31)
	Disc runout	Front Rear	——— ———	0.1 (0.004) 0.1 (0.004)
	Disc parallelism	Front and rear	———	0.015 (0.0006)
		Front D13B2, D13B3 3D B16A2, D16Z7 (4WD) Others Rear	9.5 (0.37) 10.0 (0.39) 9.0 (0.35) 7.5 (0.03)	1.6 (0.006) 1.6 (0.006) 1.6 (0.006) 1.6 (0.006)
Rear brake drum	I.D.	2WD 4WD	180 (7.09) 200 (7.87)	181 (7.13) 201 (7.91)
	Lining thickness	2WD 4WD	4.5 (0.18) 4.0 (0.16)	2.0 (0.08) 2.0 (0.08)

Brake booster	Characteristics at 200 N (20 kg, 44 lbs) pedal force.	Vacuum mmHg (inHg)	Line pressure kPa (kg/cm², psi)
	D16Z7 (4WD) without ABS	0 (0) 300 (11.8) 500 (19.7)	1,310 (13.1, 186) 5,460 (54.6, 776) 8,300 (83.0, 1,180)
	B16A2 without ABS	0 (0) 300 (11.8) 500 (19.7)	1,310 (13.1, 186) 5,460 (54.6, 776) 7,650 (76.5, 1,088)
	D16Z7 (4WD) and B16A2 with ABS	0 (0) 300 (11.8) 500 (19.7)	920 (9.2, 131) 5,570 (55.7, 792) 8,740 (87.4, 1,243)
	D13B2, D13B3 3D	0 (0) 300 (11.8) 500 (19.7)	1,520 (15.2, 216) 5,310 (53.1, 755) 7,880 (78.8, 1,120)
	Others	0 (0) 300 (11.8) 500 (19.7)	1,520 (15.2, 216) 6,380 (63.8, 907) 8,870 (88.7, 1,261)

Standards and Service Limits

Air Conditioning — Section 22

	MEASUREMENT		STANDARD (NEW)
Air conditioning system SANDEN Engine type: D15B7, D15Z1, D16Z6, D16Z7, D16Y1	Lubricant type: SP – 10 (P/N 38899 – P13 – 003) (For Refrigerant: HFC-134a (R-134a))		
	Lubricant capacity mℓ (fl oz, Imp oz)	Condenser Evaporator Line or hose Receiver	20 (2/3, 0.7) 45 (1 1/2, 1.6) 10 (1/3, 0.4) 10 (1/3, 0.4)
MATSUSHITA Engine type: D12B1, D13B2, D13B3, D15B2, D15B3, D15Y2	Lubricant type: GU10 (P/N 38899 – P08 – 003) (For Refrigerant: HFC-134a (R-134a))		
	Lubricant capacity mℓ (fl oz, Imp oz)	Condenser Evaporator Line or hose Receiver	15 (1/2, 0.5) 35 (1 1/6, 1.2) 10 (1/3, 0.4) 10 (1/3, 0.4)
NIPPONDENSO Engine type: B16A2	Lubricant type: ND – OIL8 (P/N 38899 – PR7 – 003) (For Refrigerant: HFC-134a (R-134a))		
	Lubricant capacity mℓ (fl oz, Imp oz)	Condenser Evaporator Line or hose Receiver	25 (5/6, 0.9) 60 (2, 2.1) 10 (1/3, 0.4) 10 (1/3, 0.4)
Compressor SANDEN Engine type: D15B7, D15Z1, D16Z6, D16Z7, D16Y1	Lubricant type: SP – 10 (P/N 38899 – P13 – 003) (For Refrigerant: HFC-134a (R-134a))		
	Lubricant capacity mℓ (fl oz, Imp oz) Field coil resistance at 20°C (68°F) Ω Pulley-to-pressure plate clearance		120 (4, 4.2) 2.65 – 2.95 0.5 ± 0.15 (0.02 ± 0.006)
MATSUSHITA Engine type: D12B1, D13B2, D13B3, D15B2, D15B3, D15Y2	Lubricant type: GU10 (P/N 38899 – P08 – 003) (For Refrigerant: HFC-134a (R-134a))		
	Lubricant capacity mℓ (fl oz, Imp oz) Field coil resistance at 20°C (68°F) Ω Pulley-to-pressure plate clearance		140 (4 2/3, 4.9) 3.16 – 3.50 0.5 ± 0.1 (0.02 ± 0.004)
NIPPONDENSO Engine type: B16A2	Lubricant type: ND – OIL8 (P/N 38899 – PR7 – 003) (For Refrigerant: HFC-134a (R-134a))		
	Lubricant capacity mℓ (fl oz, Imp oz) Stator coil resistance at 20°C (68°F) Ω Pulley-to-pressure plate clearance		120 (4, 4.2) 3.4 – 3.8 0.5 ± 0.15 (0.02 ± 0.006)
Compressor belt*	Deflection with 98 N (10 kg, 22 lbs) between pulleys		6.5 – 10.5 (0.26 – 0.41) with used belt 5.0 – 7.0 (0.20 – 0.28) with new belt
	Belt tension N (kg, lbs) Measured with belt tension gauge		350 – 500 (35 – 50, 77 – 110) with used belt 600 – 800 (60 – 80, 132 – 176) with new belt

*: When using a new belt, adjust deflection or tension to new values. Run the engine for 5 minutes then turn it off. Readjust deflection or tension to used belt values.

Unit of length: mm (in)

Electrical — Section 23

	MEASUREMENT	STANDARD (NEW)	
Ignition coil	Rated voltage V	12	
	Primary winding resistance Ω at 20°C (68°F)	0.5 – 0.7*1	0.6 – 0.8*2
	Secondary winding resistance kΩ at 20°C (68°F)	14.4 – 21.6*1	13.2 – 19.8*2
Spark plug	Type	See Section 23	
	Gap	1.1 $^{0}_{-0.1}$ (0.043 $^{0}_{-0.004}$)	
Ignition timing	At idling ° BTDC	D15B3 (A/T): 12° ± 2° (Red) BTDC D13B2, B13B3, D15Z2, D15B3 (M/T), D15B4: 20° ± 2° (Red) BTDC Others: 16° ± 2° (Red) BTDC	
Alternator belt*3	Deflection with 100 N (10 kg, 22 lbs) between pulleys Except B16A2	7.0 – 10.5 (0.28 – 0.41) with used belt 5.5 – 8.0 (0.22 – 0.31) with new belt	
	B16A2	5.0 – 7.0 (0.20 – 0.28) with new belt	
	Tension measured with belt tension gauge N (kg, lbs) Except B16A2	350 – 550 (35 – 50, 77 – 110) with used belt 550 – 750 (55 – 75, 121 – 165) with new belt	
	B16A2	700 – 900 (79 – 90, 154 – 198) with new belt	
Alternator (NIPPONDENSO)	Output 13.5 V at hot A	70	
	Coil resistance (rotor) Ω	2.3	———
	Slip ring O.D.	14.4 (0.567)	14.0 (0.551)
	Brush length	10.5 (0.41)	1.5 (0.06)
	Brush spring tension g (oz)	330 (11.6)	———
Alternator (MITSUBISHI)	Output 13.5 V at hot A	70	
	Coil resistance (rotor) Ω	3.4 – 3.8	———
	Slip ring O.D.	22.7 (0.89)	22.2 (0.87)
	Brush length	20.0 (0.79)	5.0 (0.20)
	Brush spring tension g (oz)	300 – 450 (10.6 – 15.9)	———
Alternator (NIPPONDENSO)	Output 13.5 V at hot A	80	
	Coil resistance (rotor) Ω	2.9	———
	Slip ring O.D.	14.4 (0.567)	14.0 (0.551)
	Brush length	10.5 (0.41)	1.5 (0.06)
	Brush spring tension g (oz)	300 – 360 (10.6 – 12.7)	———
Starter motor (HITACHI 0.8 kW)	Type	Direct drive	
	Mica depth	0.5 – 0.8 (0.02 – 0.03)	0.2 (0.008)
	Commutator runout	0 – 0.1 (0 – 0.004)	0.4 (0.016)
	Commutator O.D.	40.0 (1.574)	39.0 (1.535)
	Brush length	14.5 – 15.5 (0.57 – 0.61)	11.0 (0.43)
	Brush spring tension (new) N (kg, lbs)	13 (1.3, 2.9)	———
Starter motor (MITSUBA 1.0 kW, 1.2 kW, 1.4 kW)	Type	Gear reduction	
	Mica depth	0.4 – 0.5 (0.016 – 0.020)	0.15 (0.006)
	Commutator runout	0 – 0.02 (0 – 0.001)	0.05 (0.002)
	Commutator O.D.	28.0 – 28.1 (1.102 – 1.106)	27.5 (1.083)
	Brush length 1.0 kW, 1.2 kW	14.3 – 14.7 (0.56 – 0.58)	9.5 (0.37)
	1.4 kW	15.8 – 16.2 (0.62 – 0.64)	11.0 (0.43)
	Brush spring tension (new) 1.0 kW, 1.2 kW	18.5 – 23.5 (1.85 – 2.35, 4.1 – 5.2)	———
	N (kg, lbs) 1.4 kW	16 – 18 (1.6 – 1.8, 3.5 – 4.0)	———
Starter motor (NIPPONDENSO 1.0 kW, 1.2 kW)	Type	Gear reduction	
	Mica depth	0.5 – 0.8 (0.02 – 0.03)	0.2 (0.008)
	Commutator runout	0 – 0.02 (0 – 0.001)	0.05 (0.002)
	Commutator O.D.	29.9 – 30.0 (1.177 – 1.181)	29.0 (1.14)
	Brush length 1.0 kW	13.0 – 13.5 (0.51 – 0.53)	8.5 (0.33)
	1.2 kW	15.0 – 15.5 (0.59 – 0.61)	10.0 (0.39)
	Brush spring tension (new) 1.0 kW	18 – 24 (1.8 – 2.4, 4.0 – 5.3)	———
	N (kg, lbs) 1.2 kW	13 – 20 (1.3 – 2.1, 2.9 – 4.6)	———

*1: D12B1, D13B2, D13B3, D15B3, D15Z2 engines
*2: D15B2, D15B7, D15Z1, D16A7, D16A9, D16Z6, D16Z7, D16Y1, B16A2 engines
*3: When using a new belt, adjust deflection or tension to new belt values. Run the engine for 5 minutes then turn it off. Readjust deflection or tension to used belt values.

Design Specifications

	ITEMS		METRIC	ENGLISH	NOTES
DIMENSIONS 2D H/B	Overall length		4,080 mm	160.6 in	Except KQ, KY
			4,090 mm	161.0 in	For Finland only
			4,070 mm	160.2 in	KQ
			4,075 mm	160.4 in	KY
	Overall width		1,695 mm	66.7 in	
	Overall height		1,345 mm	53.0 in	
			1,355 mm	53.3 in	KY
	Wheelbase		2,570 mm	101.2 in	
	Track	Front	1,475 mm	58.1 in	
		Rear	1,465 mm	57.8 in	
	Ground clearance		160 mm	6.3 in	
			150 mm	5.9 in	Except VEi model with CATA
	Seating capacity	Except cars with B16A2 engine	Five (5)		
		Cars with B16A2 engine	Four (4)		
DIMENSIONS 4D	Overall length		4,405 mm	173.4 in	Except KQ, KY
			4,415 mm	173.8 in	For Finland only
			4,395 mm	173.0 in	KQ, KY
	Overall width		1,695 mm	66.7 in	
	Overall height		1,375 mm	54.1 in	2WD
			1,390 mm	54.7 in	KY
			1,395 mm	54.9 in	4WD
	Wheelbase		2,620 mm	103.1 in	
	Track	Front	1,475 mm	58.1 in	
		Rear 2WD	1,465 mm	57.8 in	
		4WD	1,455 mm	57.3 in	
	Ground clearance		160 mm	6.3 in	
			150 mm	5.9 in	Except VEi model with CATA
	Seating capacity	Except cars with B16A2 engine	Five (5)		
		Cars with B16A2 engine	Four (4)		

European Model

	ITEM			METRIC	ENGLISH	NOTES
2-door Hatchback						
WEIGHT	Curb weight	DX	M/T	955 kg	2,105 lbs	KG, KF, KE
				960 kg	2,116 lbs	KS
		EX	M/T	970 kg	2,138 lbs	KG (Austria)
		VEi	M/T	975 kg	2,149 lbs	KG, KF, KE
				980 kg	2,161 lbs	KS
		DXi	M/T	965 kg	2,127 lbs	KG
				970 kg	2,138 lbs	KS
			A/T	995 kg	2,194 lbs	KG, KF
				1,000 kg	2,205 lbs	KS
		LSi	M/T	980 kg	2,161 lbs	KG, KF, KE, KW
				985 kg	2,172 lbs	KS
			A/T	1,010 kg	2,227 lbs	KG, KF, KE, KW
				1,015 kg	2,238 lbs	KS
		ESi	M/T	1,015 kg	2,238 lbs	KG, KF
				1,030 kg	2,271 lbs	KE
				1,020 kg	2,246 lbs	KS
			A/T	1,045 kg	2,303 lbs	KG, KF
				1,060 kg	2,337 lbs	KE
				1,050 kg	2,315 lbs	KS
		VTi	M/T	1,100 kg	2,425 lbs	KG, KF, KW
				1,105 kg	2,436 lbs	KS
	Weight distributions (Front/Rear)					
		DX	M/T	580/375 kg	1,279/827 lbs	KG, KF, KE
				585/375 kg	1,290/827 lbs	KS
		EX	M/T	595/375 kg	1,312/827 lbs	KG, KF
		VEi	M/T	600/375 kg	1,323/827 lbs	KG, KF, KE
				605/375 kg	1,334/827 lbs	KS
		DXi	M/T	590/375 kg	1,301/827 lbs	KG, KF
				595/375 kg	1,312/827 lbs	KS
			A/T	620/375 kg	1,367/827 lbs	KG, KF
				625/375 kg	1,378/827 lbs	KS
		LSi	M/T	605/375 kg	1,331/827 lbs	KG, KF, KE, KW
				610/375 kg	1,345/827 lbs	KS
			A/T	635/375 kg	1,400/827 lbs	KG, KF, KE, KW
				640/375 kg	1,411/827 lbs	KS
		ESi	M/T	625/390 kg	1,378/860 lbs	KG, KF
				635/395 kg	1,400/871 lbs	KE
				630/390 kg	1,389/860 lbs	KS
			A/T	655/390 kg	1.444/860 lbs	KG, KF
				665/395 kg	1,460/871 lbs	KE
				660/390 kg	1,455/860 lbs	KS
		VTi	M/T	695/405 kg	1,532/893 lbs	KG, KF, KW
				700/405 kg	1,543/893 lbs	KS
	Max. permissible weight (EC)					
		DX		1,380 kg	3,042 lbs	
		EX, VEi, DXi, LSi, VTi		1,460 kg	3,219 lbs	
		ESi		1,500 kg	3,310 lbs	

Design Specifications

European Model

	ITEM			METRIC	ENGLISH	NOTES
4-door Sedan						
WEIGHT	Curb weight	VEi	M/T	1,010 kg	2,227 lbs	KG, KE, KF
				1,015 kg	2,238 lbs	KS
		DXi	M/T	1,000 kg	2,205 lbs	KG
				1,005 kg	2,216 lbs	KS
			A/T	1,030 kg	2,271 lbs	KG
				1,035 kg	2,282 lbs	KS
		LSi	M/T	1,015 kg	2,238 lbs	KG, KE, KF, KW
				1,020 kg	2,249 lbs	KS
			A/T	1,045 kg	2,304 lbs	KG, KE, KF, KW
				1,050 kg	2,315 lbs	KS
		ESi	M/T	1,050 kg	2,315 lbs	KG, KE, KF, KW
				1,055 kg	2,326 lbs	KS
			A/T	1,080 kg	2,381 lbs	KG, KE, KF, KW
				1,085 kg	2,392 lbs	KS
		ESi with ABS	M/T	1,065 kg	2,348 lbs	KG, KE, KF, KW
				1,070 kg	2,359 lbs	KS
			A/T	1,095 kg	2,414 lbs	KG, KE, KF, KW
				1,100 kg	2,425 lbs	KS
		VTi	M/T	1,140 kg	2,513 lbs	KG, KE, KF, KW
				1,145 kg	2,524 lbs	KS
		RSTi	M/T	1,140 kg	2,513 lbs	KG
			A/T	1,160 kg	2,557 lbs	KG
	Weight distributions (Front/Rear)					
		VEi	M/T	605/405 kg	1,334/893 lbs	KG, KE, KF
				610/405 kg	1,345/893 lbs	KS
		DXi	M/T	595/405 kg	1,312/893 lbs	KG
				600/405 kg	1,323/893 lbs	KS
			A/T	625/405 kg	1,378/893 lbs	KG
				630/405 kg	1,389/893 lbs	KS
		LSi	M/T	610/405 kg	1,345/893 lbs	KG, KE, KF, KW
				615/405 kg	1,356/893 lbs	KS
			A/T	640/405 kg	1,411/893 lbs	KG, KE, KF, KW
				645/405 kg	1,422/893 lbs	KS
		ESi	M/T	630/420 kg	1,389/926 lbs	KG, KE, KF, KW
				635/420 kg	1,400/926 lbs	KS
			A/T	660/420 kg	1,455/926 lbs	KG, KE, KF, KW
				665/420 kg	1,466/926 lbs	KS
		ESi with ABS	M/T	640/425 kg	1,411/937 lbs	KG, KE, KF, KW
				645/425 kg	1,422/937 lbs	KS
			A/T	670/425 kg	1,477/937 lbs	KG, KE, KF, KW
				675/425 kg	1,488/937 lbs	KS
		VTi	M/T	705/435 kg	1,554/959 lbs	KG, KE, KF, KW
				710/435 kg	1,565/959 lbs	KS
		RTSi	M/T	675/465 kg	1,488/1,025 lbs	KG
			A/T	695/465 kg	1,532/1,025 lbs	KG
	Max. Permissible Weight					
		VEi, DXi, LSi		1,500 kg	3,307 lbs	
		ESi		1,530 kg	3,373 lbs	
		ESi with ABS		1,545 kg	3,406 lbs	
		VTi		1,520 kg	3,351 lbs	
		RTSi		1,640 kg	3,616 lbs	

Except European Model

	ITEM			METRIC	ENGLISH	NOTES
2-door Hatchback						
WEIGHT	Curb weight	CX	M/T	1,000 kg	2,205 lbs	KQ
		GLi	M/T	1,013 kg	2,233 lbs	KQ
			A/T	1,039 kg	2,291 lbs	KQ
		VTi	M/T	1,051 kg	2,317 lbs	KQ
			A/T	1,077 kg	2,374 lbs	KQ
		1.5EL	M/T	993 kg	2,189 lbs	KY
			A/T	1,013 kg	2,233 lbs	KY
		EX	M/T	1,008 kg	2,222 lbs	KY
			A/T	1,028 kg	2,266 lbs	KY
	Weight distributions (Front/Rear)					
		CX	M/T	610/390 kg	1,321/860 lbs	KQ
		GLi	M/T	619/394 kg	1,365/869 lbs	KQ
			A/T	647/392 kg	1,426/864 lbs	KQ
		VTi	M/T	639/412 kg	1,409/908 lbs	KQ
			A/T	665/412 kg	1,466/908 lbs	KQ
		1.5EL	M/T	611/382 kg	1,347/842 lbs	KY
			A/T	635/378 kg	1,340/833 lbs	KY
		EX	M/T	624/384 kg	1,376/847 lbs	KY
			A/T	648/380 kg	1,429/838 lbs	KY
4-door Sedan						
WEIGHT	Curb weight	VEi	M/T	1,043 kg	2,220 lbs	KQ
		GLi	M/T	1,046 kg	2,242 lbs	KQ
			A/T	1,072 kg	2,286 lbs	KQ
		VTi	M/T	1,088 kg	2,304 lbs	KQ
			A/T	1,119 kg	2,348 lbs	KQ
		1.5EL	M/T	1,017 kg	2,242 lbs	KY
			A/T	1,037 kg	2,286 lbs	KY
		1.5EX	M/T	1,045 kg	2,304 lbs	KY
			A/T	1,065 kg	2,348 lbs	KY
		Si	M/T	1,090 kg	2,403 lbs	KY
			A/T	1,115 kg	2,458 lbs	KY
	Weight distributions (Front/Rear)					
		VEi	M/T	634/409 kg	1,398/902 lbs	KQ
		GLi	M/T	626/420 kg	1,380/926 lbs	KQ
			A/T	668/420 kg	1,473/926 lbs	KQ
		VTi	M/T	644/444 kg	1,420/979 lbs	KQ
			A/T	677/442 kg	1,493/974 lbs	KQ
		1.5EL	M/T	625/392 kg	1,378/864 lbs	KY
			A/T	649/388 kg	1,431/855 lbs	KY
		1.5EX	M/T	633/412 kg	1,396/908 lbs	KY
			A/T	657/408 kg	1,448/899 lbs	KY
		Si	M/T	649/441 kg	1,431/972 lbs	KY
			A/T	680/435 kg	1,499/959 lbs	KY

Design Specifications

	ITEM		METRIC	ENGLISH	NOTES
ENGINE	Type	Except B16A2, D16A9	Water-cooled, 4-stroke SOHC*1 or SOHC VTEC*2 gasoline engine		*1: Except D15Z1, D16Z6, D16Y1, B16A2, D16A9 *2: D15Z1, D16Z6, D16Y1 *3: D16A9 *4: B16A2
		B16A2, D16A9	Water-cooled, 4-stroke DOHC*3 or DOHC VTEC*4 gasoline engine		
	Cylinder Arrangement		4-cylinders Inline, transverse		
	Bore and Stroke				
	D12B1		75.0 x 67.5 mm	2.95 x 2.66 in	
	D13B2, D13B3		75.0 x 76.0 mm	2.95 x 2.99 in	
	D15B2, D15B3, D15B7, D15Z1, D15Z2		75.0 x 84.5 mm	2.95 x 3.33 in	
	D16A7, D16A9, D16Z6, D16Z7, D16Y1		75.0 x 90.5 mm	2.95 x 3.54 in	
	B16A2		81.0 x 77.4 mm	3.19 x 3.05 in	
	Displacement				
	D12B1		1,193 cm³	73.0 cu-in	
	D13B2, D13B3		1,343 cm³	82.0 cu-in	
	D15B2, D15B3, D15B7, D15Z1, D15Z2		1,493 cm³	91.0 cu-in	
	D16A7, D16A9, D16Z6, D16Z7, D16Y1		1,590 cm³	97.0 cu-in	
	B16A2		1,595 cm³	97.3 cu-in	
	Compression Ratio				
	D12B1		8.6		
	D13B2, D13B3		9.0		
	D15B2, D15B3, D15B7, D15Z2		9.2		
	D15Z1		9.3		
	D16A7		9.1		
	D16Z6, D16Z7, D16Y1		9.2		
	D16A9		9.5		
	B16A2		10.2		
	Valve Train	Except B16A2, D16A9	Belt driven, 4 valves per cylinder, SOHC*1 or SOHC VTEC*2		
		B16A2, D16A9	Belt driven, 4 valves per cylinder, DOHC*3 or DOHC VTEC*4		
	Lubrication System		Forced and wet sump, trochoid pump		
	Oil Pump Displacement	Except B16A2, D16A9	45 ℓ (48 US qt, 40 Imp qt)/minute		
		D16A9	63 ℓ (67 US qt, 55 Imp qt)/minute		
		B16A2	73 ℓ (77 US qt, 64 Imp qt)/minute		
	Water Pump Displacement at 6,000 min⁻¹ (rpm)				
		Except B16A2, D16A9	125 ℓ (132 US qt, 110 Imp qt)/minute		
		D16A9	112 ℓ (118 US qt, 99 Imp qt)/minute		
		B16A2	140 ℓ (148 US qt, 123 Imp qt)/minute		At 6,300 min⁻¹ (rpm)
	Fuel Required	D12B1	Leaded gasoline with 85 R.O.N. or higher*5		At 6,800 min⁻¹ (rpm)
		D13B3, D15B3	Leaded gasoline with 91 R.O.N. or higher*5		At 7,800 min⁻¹ (rpm)
		D13B2, D15B2, D15Z2 D15B7, D15Z1, D16Y1	Unleaded gasoline with 91 R.O.N. or higher		
		D16Z6, D16Z7, B16A2	Premium unleaded gasoline with 95 R.O.N. or higher		
		D16A9	Premium leaded gasoline with 95 R.O.N. or higher*6		
		D16A7	Leaded gasoline with 91 R.O.N. or higher*5		
STARTER	Make/Type, Output		HITACHI/Direct drive, 0.8 kW MITSUBA/Gear reduction, 1.0 kW, 1.2 kW and 1.4 kW NIPPONDENSO/Gear reduction, 1.0 kW, 1.2 kW, 0.8 kW, 1.0 kW, 1.2 kW 1.4 kW		
	Normal Output				
	Normal Voltage		12 V		
	Hour Rating		30 seconds		
	Direction of Rotation		Clockwise as viewed from gear end		
	Weight HITACHI	0.8 kW	3.7 kg	8.2 lbs	
	MITSUBA	1.0 kW, 1.2 kW	3.4 kg	7.5 lbs	
		1.4 kW	3.5 kg	7.7 lbs	
	NIPPONDENSO	1.0 kW	3.85 kg	8.49 lbs	
		1.2 kW	3.4 kg	7.5 lbs	

*5: Unleaded gasoline with 91 R.O.N. or higher may also be used.
*6: Premium unleaded gasoline with 95 R.O.N. or higher may also be used.

	ITEM		METRIC	ENGLISH	NOTES
CLUTCH	Type	M/T	Single plate dry, diaphragm spring		
		A/T	Torque converter		
	Clutch Facing Area	M/T			
	Carbureted engine		160 cm²	25 sq-in	
	PGM-FI engine except B16A2		176 cm²	27 sq-in	
	B16A2 engine		203 cm²	31 sq-in	
TRANSMISSION	Type	M/T	Synchronized 5-speed forward, 1 reverse		*1: Except KS *2: KS *3: D13B2 only
		A/T 2WD	4-speed automatic with lock-up clutch, 1 reverse		
		A/T 4WD	Electronically controlled 4-speed automatic, 1 reverse		
	Primary Reduction Gear	Type, Ratio	Direct, 1 : 1		

Manual Transmission

		Engine Type					
		D12B1 D13B2 D13B3 D15B2 D15B3 D15Z2 D16A7 D16A9	D15Z1	D16Z6*1 D16Z7 (2WD) D16Y1	D16Z6*2	D16Z7 (4WD)	B16A2
Gear Ratio	1st	3.250	3.250	3.250	3.250	3.384	3.230
	2nd	1.900	1.761	1.900	1.900	1.952	2.105
	3rd	1.250	1.172	1.250	1.250	1.266	1.458
	4th	0.909	0.909	0.937	0.909	0.942	1.107
	5th	0.750	0.702	0.771	0.702	0.789	0.875
	Reverse	3.153	3.153	3.153	3.153	3.000	3.000
Final Reduction Gear	Ratio	4.250 4.437*3	3.722	4.250	4.250	4.428	4.266
	Type	Single helical gear					

Automatic Transmission

		Engine Type			
		D12B1, D15B3, D16A9	D15B2, D15B7, D16Z6*1 D16Y1	D16Z6*2	D16Z7 (4WD)
Gear Ratio	1st	2.722	2.600	2.600	2.526
	2nd	1.555	1.393	1.468	1.428
	3rd	1.027	0.975	0.975	0.974
	4th	0.780	0.772	0.638	0.733
	Reverse	1.954	1.954	1.954	1.954
Final Reduction Gear	Ratio	3.937	4.333	4.333	4.333
	Type	Single helical gear			

(cont'd)

Design Specifications

(cont'd)

	ITEM		METRIC	ENGLISH	NOTES
AIR CONDITIONING	Cooling Capacity	SANDEN	3.351 kcal/h	13,290 BTU/h	RHD
			3.838 kcal/h	15,220 BTU/h	LHD
		MATSUSHITA	3.851 kcal/h	15,270 BTU/h	
		NIPPONDENSO	3.851 kcal/h	15,270 BTU/h	
	Compressor	Type/Make	Scroll/SANDEN		Except B16A2, D15B2, D15Z1
		No. of Cylinder	—		
		Capacity	85.7 cm^3/rev	5.22 cu-in/rev	
		Max. Speed	10,000 min^{-1} (rpm)		
		Lubricant Type	SP-10		
		Lubricant Capacity	120 mℓ	4 fl oz, 4.2 Imp oz	
	Compressor	Type/Make	Vane rotary/MATSUSHITA		D15B2, D15Z1
		No. of Cylinder	3		
		Capacity	150 cm^3/rev	9.15 cu-in/rev	
		Max. Speed	8,000 min^{-1} (rpm)		
		Lubricant Type	GU10		
		Lubricant Capacity	140 mℓ	4 2/3 fl oz, 4.9 Imp oz	
	Compressor	Type/Make	Swash-plate/NIPPONDENSO		B16A2
		No. of Cylinder	10		
		Capacity	155.3 cm^3/rev	9.47 cu-in/rev	
		Max. Speed	7,600 min^{-1} (rpm)		
		Lubricant Type	ND-OIL8		
		Lubricant Capacity	120 mℓ	4 fl oz, 4.2 Imp oz	
	Condenser	Type	Corrugated fin		
	Evaporator	Type	Corrugated fin		
	Blower	Type	Sirocco fan		At 12V
		Motor Input	200 W/ 12 V max.		
		Speed Control	4-speed		
		Max. Capacity	430 m^3/h	15,188 cu-ft/h	
	Temp. Control	Type	Air-mix		
	Compressor Clutch	Type	Dry, single plate, poly-V belt drive		
		Power Consumption	42 W max./12 V		SANDEN
			40 W max./12 V		Except SANDEN
	Refrigerant	Type	HFC-134a (R-134a)		
		Quantity	550 $^{0}_{-50}$ g	19.4 $^{0}_{-1.8}$ oz	

Design Specifications

	ITEM			METRIC	ENGLISH	NOTES
STEERING SYSTEM	Type		P/S	Power assisted, rack and pinion		
			M/S	Rack and pinion		
	Overall Ratio	VTi	P/S	LHD: 17.5	RHD: 16.5	
		Except VTi	P/S	LHD: 17.5	RHD: 17.0	
			M/S	LHD: 19.0	RHD: 19.0	
	Turns, Lock-to-lock VTi		P/S	LHD: 3.3	RHD: 3.1	
		Except VTi	P/S	LHD: 3.6	RHD: 3.5	
			M/S	LHD: 3.9	RHD: 3.9	
	Steering Wheel Diameter	Except VTi and VTi		375 mm	14.8 in	
			VEi	380 mm	15.0 in	
			VTi	377 mm	14.8 in	
SUSPENSION	Type	Front and Rear		Independent double wishbone, coil spring		
	Shock Absorber	Front and Rear		Telescopic, hydraulic nitrogen gas-filled		
WHEEL ALIGNMENT	Camber					
	Front	VTi		−0°05′		
		2WD except VTi		0°00′		
		4WD		0°15′		
	Rear	VTi		−0°25′		
		2WD except VTi		−0°20′		
		4WD		−0°25′		
	Caster					
	Front	2WD		1°10′		
		4WD		1°05′		
	Toe					
	Front			0 mm	0 in	
	Rear			In 2.0 mm	In 0.08 in	
		4WD with ABS		0 mm	0 in	
BRAKE SYSTEM	Type		Front	Power-assisted self-adjusting ventilated disc		
			Rear	Power-assisted self-adjusting solid disc or drum		
	Pad and Lining Surface Area					Unit: mm (in)
			Front	35.8 cm² x 2	5.5 sq-in x 2	Disc dia, 190 (7.5)
				43.2 cm² x 2	6.7 sq-in x 2	Disc dia, 191 (7.5)
				51.5 cm² x 2	8.0 sq-in x 2	Disc dia, 211 (8.3)
			Rear	21.0 cm² x 2	3.26 sq-in x 2	Disc dia, 208 (8.2)
				50.2 cm² x 2	7.8 sq-in x 2	Drum I.D. 180 (7.1)
				67.2 cm² x 2	10.4 sq-in x 2	Drum I.D. 200 (7.9)
	Parking Brake		Type	Mechanical actuating, rear two wheel brakes		
TIRE	Size and Pressure			See tire information label (see page 1-15)		

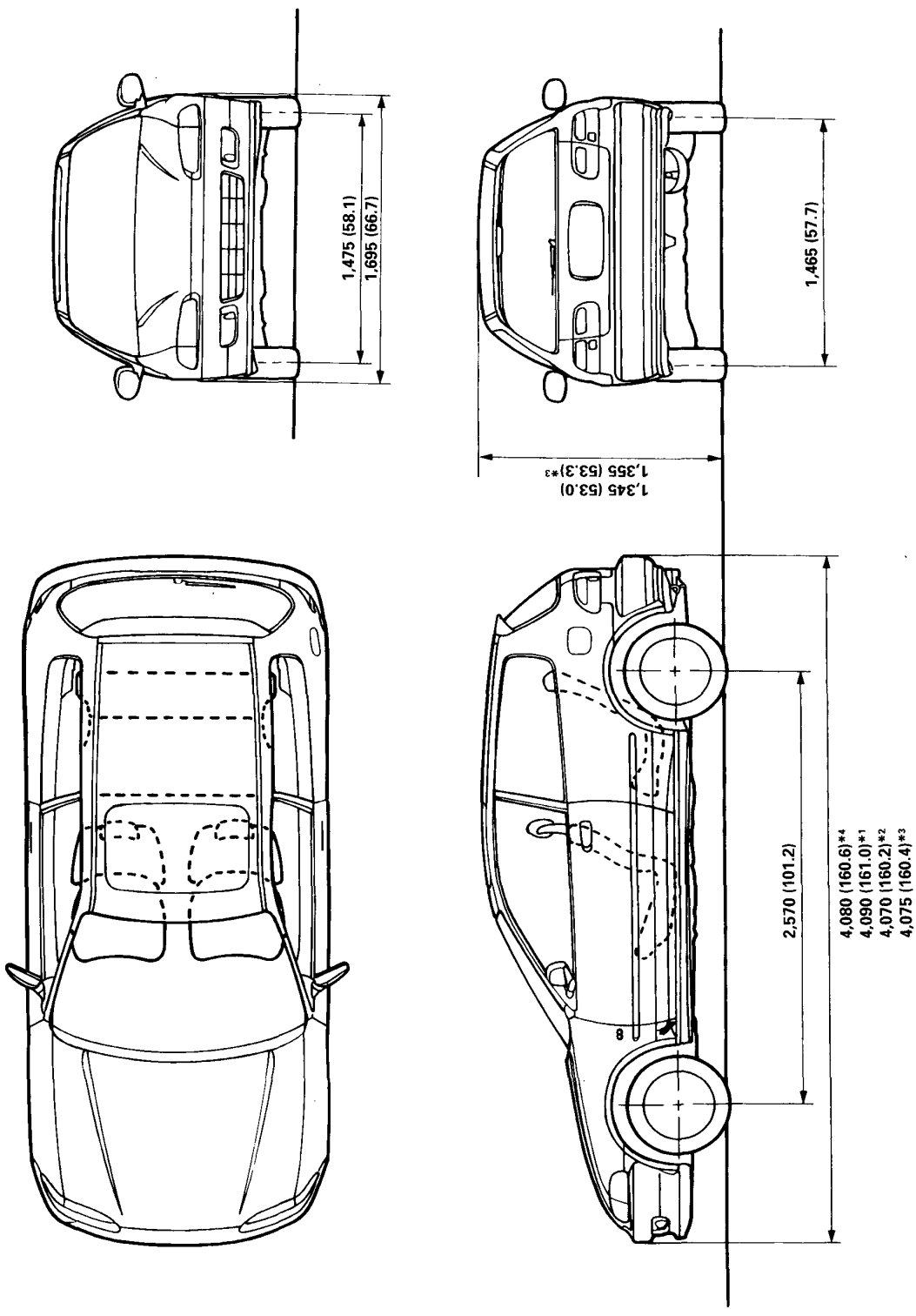
Design Specifications

	ITEM	METRIC	ENGLISH	NOTES
ELECTRICAL	Battery	12 V – 47 AH, 36 AH, 38 AH/5 HR		
	Starter	12 V – 0.8 kW, 12 V – 1.0 kW, 12 V –1.2 kW 12 V – 1.4 kW		
	Alternator	12 V – 70 A, 80 A		
	Fuses			
	In the Under-dash Fuse Box	7.5 A, 10 A, 15 A, 20 A, 30 A		
	In the Under-hood Fuse/Relay Box	7.5 A, 10 A, 15 A, 20 A, 30 A, 40 A, 50 A, 80 A		
	In the Under-hood ABS Fuse/Relay Box	7.5 A, 15 A, 20 A, 50 A,		
	Headlights High/Low	12 V – 60/55 W		
	Front Turn Signal Lights	12 V – 21 W		
		12 V – 43/3CP		KY model
	Front position Lights	12 V – 5 W		
	Side Turn Signal Lights	12 V – 5 W		
	Rear Turn Signal Lights	12 V – 21W		
	Brake/Taillights	12 V – 21/5 W		
	High Mount Brake Light 3-door	12 V – 21 CP		KQ and KY models
	4-door	12 V – 32 CP		KB model
		12 V – 21 W		KQ and KY models
	Back-up Lights	12 V – 21 W		
	License Plate Lights	12 V – 5 W		
		12 V – 8 W		KB model
	Ceiling Lights	12 V – 5 W		
	Trunk/Luggage Area Lights	12 V – 3.4 W		
	Gauge Lights	12 V – 3.0 W		
	Indicator Lights	12 V – 1.2 W, 1.4 W, 0.84 W		
	Illumination and Pilot Lights	12 V – 1.4 W, 1.12 W, 0.84 W 12 V – 0.91 W, 0.56 W, LED		
	Heater Illumination Lights	12 V – 1.4 W		
	Rear Fog Light	12 V – 21 W		European, KB and KP models

Body Specifications

2-door Hatchback:

Unit: mm (in)

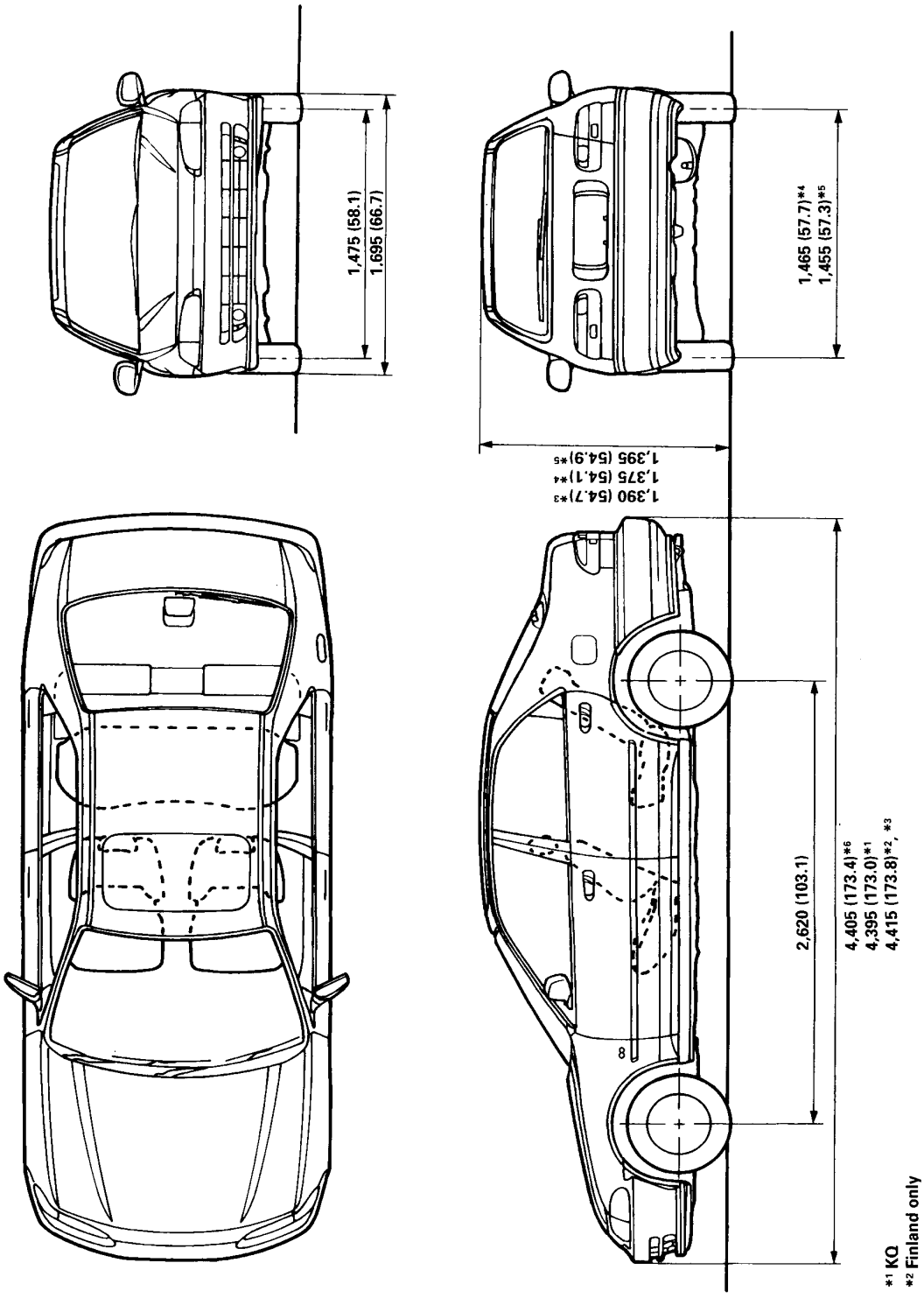


*1 Finland only, *2 KQ, *3 KY, *4 Except KQ, KY

Body Specifications

4-door Sedan:

Unit: mm (in)



Maintenance

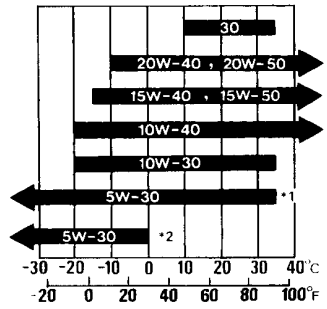
Lubrication Points 4-2
Maintenance Schedule 4-4

Lubrication Points

For the details of lubrication points and types of lubricants to be applied, refer to the Illustrated Index and various work procedures (such as Assembly/Reassembly, Replacement, Overhaul, Installation, etc.) contained in each section.

No.	LUBRICATION POINTS		LUBRICANT
1	Engine		API Service Grade: SF, SG or SH fuel efficient oil SAE Viscosity: See chart below
2	Transmission	Manual	API Service Grade: SF or SG SAE Viscosity: 10 W—30 or 10 W—40
		Automatic	Honda Premium Formula or DEXRON® II Automatic transmission fluid (ATF)
3	Brake Line		Brake fluid DOT3 or DOT4
4	Clutch Line		Brake fluid DOT3 or DOT4
5	Power steering gearbox		Steering grease P/N 08733—B070E
6	Shift lever pivots (Manual transmission)		Grease with molybdenum disulfide
7	Release fork (Manual transmission)		Urea Grease UM264 P/N 41211—PY5—305
8 9 10 11 12 13 14 15 16 17 18 19 20 21	Steering boots Tailgate hinges and latches (2-door Hatchback) Steering ball joints Select lever (Automatic transmission) Pedal linkage Brake master cylinder pushrod Trunk hinges and latch (4-door Sedan) Door hinges upper and lower Door opening detents Fuel filler lid Engine hood hinges and engine hood latch Clutch master cylinder pushrod Throttle cable end Rear brake shoe linkages		Multi-purpose grease
22	Caliper Piston seal, Dust seal, Caliper pin, Piston		Silicone grease
23	Power steering system (For cars with P/S)		Honda power steering fluid-V
24	Rear differential (4WD only)		Honda Premium Formula or DEXRON® II Automatic transmission fluid (ATF)
25	Air conditioning compressor		Compressor oil: NIPPONDENSO: ND-OIL8 P/N 38899—PR7—003 MATSUSHITA: GU10 P/N 38899—P08—003 SANDEN: SP-10 P/N 38899—P13—003 (For Refrigerant: HFC-134a (R-134a))

Recommended Engine Oil
API Service Grade: SF, SG or SH fuel efficient oil.
Select the oil for the car according to this chart.

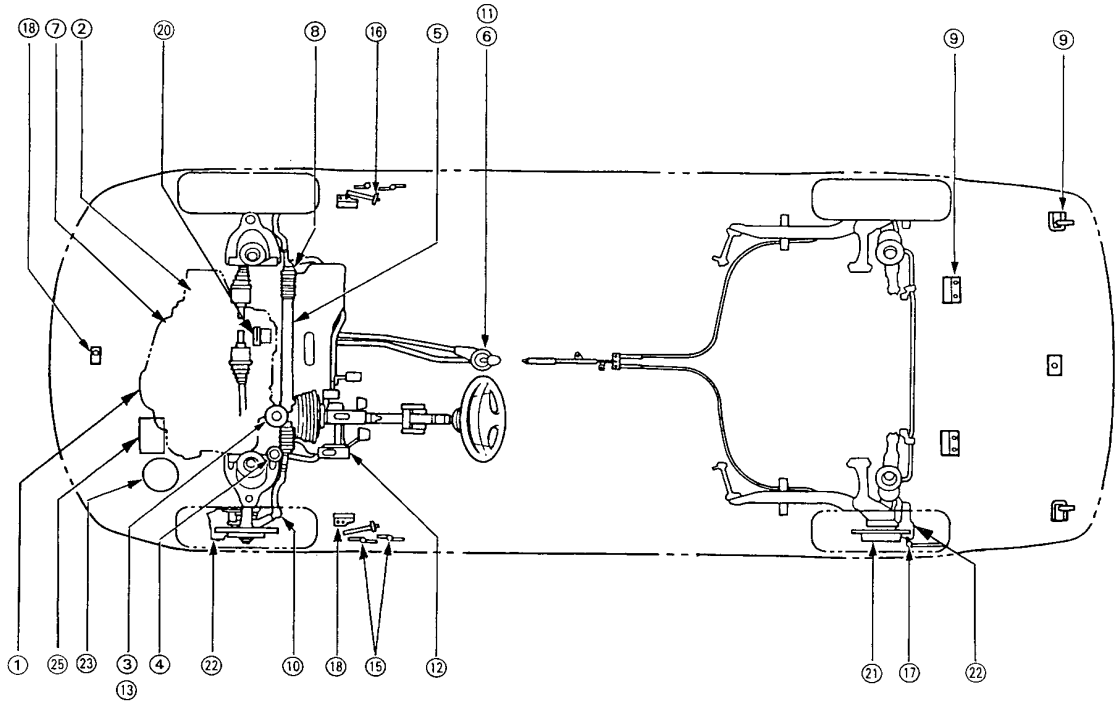


Ambient temperature ranges

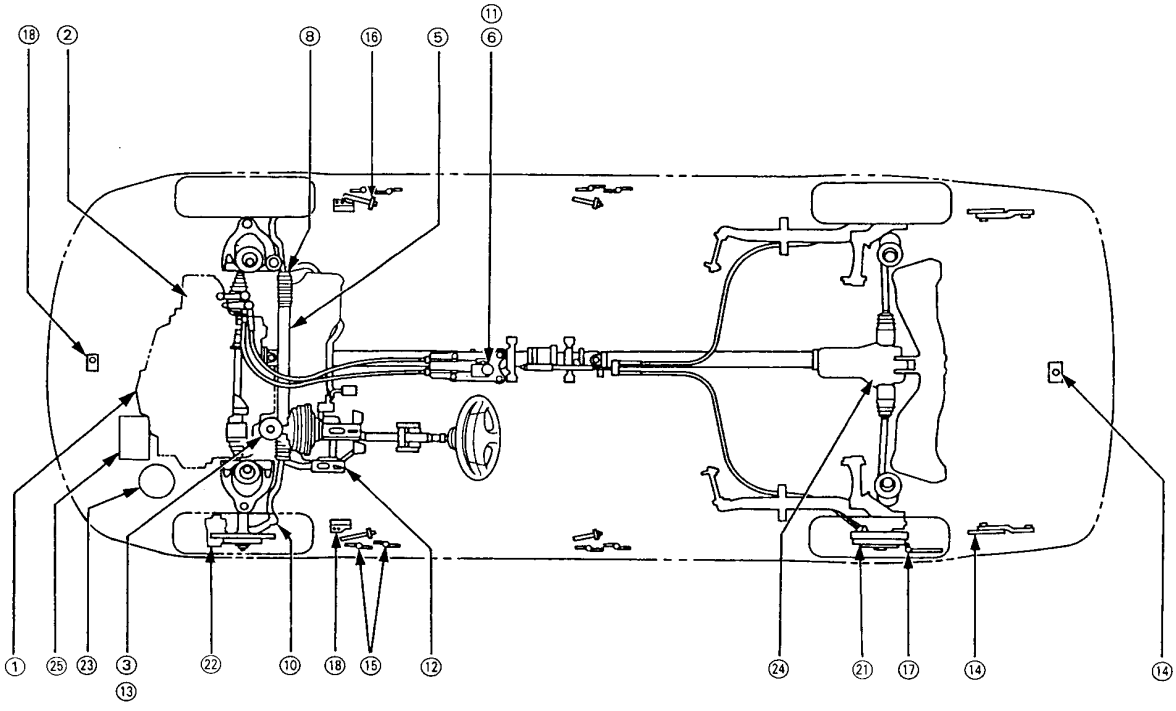
*1: Except B16A2, D16A9 engines
*2: B16A2, D16A9 engines

CAUTION: Used engine oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily basis, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil.

2-door Hatchback:



4-door Sedan and 4WD:



R = Replace C = Clean I = Inspect: After inspection, clean, adjust, fill up, repair or replace if necessary.

Service at the interval listed x 1,000 km (or miles) or after that number of months, whichever comes first.											
		x 1,000 km	20	40	60	80	100	120	140	160	180	200
		x 1,000 miles	12	24	36	48	60	72	84	96	108	120
		months	12	24	36	48	60	72	84	96	108	120
• Engine oil and oil filter	For European models		Replace every 10,000 km (6,000 miles) or 12 months									
	For Other than European models		Replace every 10,000 km (6,000 miles) or 6 months									
• Transmission oil	For European models				R			R			R	
	For Other than European models			R		R		R		R		R
Valve clearance	For European models			I		I		I		I		I
	For Other than European models		I	I	I	I	I	I	I	I	I	I
Belt tension and conditions (Alternator, Power steering*1, A/C compressor*2)				I		I		I		I		I
Timing belt							R					R
Water pump							I					I
Cooling system hoses and connections				I		I		I		I		I
• Engine coolant						R		R		R		R
Spark plug	For cars with catalytic converter			R		R		R		R		R
			For KS model, replace every 48,000 km									
	For cars without catalytic converter		R	R	R	R	R	R	R	R	R	R
Ignition timing and control system*3	For European models					I						I
Ignition timing and control system*3	For Other than European models			I		I		I		I		I
Air cleaner element	For cars with catalytic converter			R		R		R		R		R
	For cars without catalytic converter		R	R	R	R	R	R	R	R	R	R
Tank, fuel lines and connections				I		I		I		I		I
Fuel filter (Including aux. filter*3)				R		R		R		R		R
Positive crankcase ventilation valve							I					I
Throttle control system and choke opener operation*3	For European models						I					I
	For Other than European models			I		I		I		I		I

• Day to day care (engine oil, ATF and coolant level) should be done practically according to the owner's manual by the customer.

*1: For cars with Power steering system

*2: For cars with Air conditioning system

*3: For carburetor types

R = Replace C = Clean I = Inspect: After inspection, clean, adjust, fill up, repair or replace if necessary.

Service at the interval listed x 1,000 km (or miles) or after that number of months, whichever comes first.		x 1,000 km	20	40	60	80	100	120	140	160	180	200
		x 1,000 miles	12	24	36	48	60	72	84	96	108	120
		months	12	24	36	48	60	72	84	96	108	120
Choke mechanism*3	For European models				C*4		I		I		I	
	For Other than European models			I		I		I		I		I
Intake air temperature control system*3							I					I
Blow-by filter*3				I		I		I		I		I
Idle speed and idle CO			I*4	I*4	I*4	I*4	I	I	I	I	I	I
Evaporative emission control system (For Other than European models)							I					I
Distributor cap and rotor (For Other than European models)				I		I		I		I		I
Ignition wiring (For Other than European models)				I		I		I		I		I
Front brake pads			Inspect every 10,000 km (6,000 miles) or 12 months									
Front brake discs and calipers			I	I	I	I	I	I	I	I	I	I
Rear brake discs, calipers and pads				I		I		I		I		I
Rear brake drums, wheel cylinders and linings				I		I		I		I		I
Parking brake operation			I	I		I		I		I		I
Brake fluid (Including ABS*5)				R		R		R		R		R
Brake hoses and lines			I	I	I	I	I	I	I	I	I	I
Anti-lock brake system operation*5			I	I		I		I		I		I
Anti-lock brake system high pressure hose*5						R				R		
Exhaust system and condition			I	I	I	I	I	I	I	I	I	I
Catalytic converter heat shield (For cars with catalytic converter)							I					I
Suspension components			I	I	I	I	I	I	I	I	I	I
Steering function tie-rod ends, gearbox and boots			I	I		I		I		I		I
Power steering function, hoses and connections*1			I	I	I	I	I	I	I	I	I	I
All fluid levels			Inspect every 10,000 km (6,000 miles) or 12 months									

*1: For cars with Power steering system
*2: For carburetor type
*3: For KS models, recommended by manufacturer only; except for KS model, it is required
*5: For cars with anti-lock brake system

R = Replace C = Clean I = Inspect: After inspection, clean, adjust, fill up, repair or replace if necessary.

Service at the interval listed x 1,000 km (or miles) or after that number of months, whichever comes first.											
	x 1,000 km	20	40	60	80	100	120	140	160	180	200
	x 1,000 miles	12	24	36	48	60	72	84	96	108	120
	months	12	24	36	48	60	72	84	96	108	120
Battery condition		I	I	I	I	I	I	I	I	I	I
Rear differential oil (4WD model)			R		R		R		R		R
Tires condition, wear and pressure (Including spare)		Inspect every 10,000 km (6,000 miles) or 12 months									
Lights operation and headlight beam		Inspect every 10,000 km (6,000 miles) or 12 months									
Paint damages and body work		I	I	I	I	I	I	I	I	I	I
Test drive (Noise, stability, dashboard operations)		I	I	I	I	I	I	I	I	I	I
Cleanliness of controls, door handles, etc.		Inspect after every service									
Supplemental Restraint System*6		Inspect system and replace slip ring*7 10 years first registration									

*6: For cars with SRS

*7: Except for cars with passenger airbag

Severe Driving Conditions

The following items must be serviced more frequently on cars normally used under severe driving conditions.
Refer to the chart below for the appropriate maintenance intervals.

Severe driving conditions include:

A: Repeated short distance driving.
B: Driving in dusty conditions.
C: Driving in severe cold weather.
D: Driving in areas using road salt or other corrosive materials.
E: Driving in rough and/or muddy roads.
F: Towing a trailer.

R = Replace I = Inspect: After inspection, clean, adjust, fill up, repair or replace if necessary.

Condition	Maintenance Item		Operation	Interval
A B • • • F	Engine oil and oil filter	For European models	R	Every 5,000 km (3,000 miles) or 6 months
		For Others than European models	R	Every 5,000 km (3,000 miles) or 3 months
• • • • • F	Transmission oil		R	Every 20,000 km (12,000 miles) or 12 months
• B • • E •	Air cleaner element	For cars with catalytic converter	R	Every 20,000 km (12,000 miles) or 12 months
		For cars without catalytic converter	R	Every 10,000 km (6,000 miles) or 6 months
A B • D E F	Front brake discs and calipers		I	Every 10,000 km (6,000 miles) or 6 months
A B • D E F	Rear brake discs, calipers and pads		I	Every 20,000 km (12,000 miles) or 12 months
• B C • E •	Power steering system		I	Every 10,000 km (6,000 miles) or 6 months

Engine

Engine Removal/Installation 5-1
Engine Lubrication 8-1
Intake Manifold/Exhaust System 9-1

Outline of Model Changes

- The D15Z2 engine has been adopted. Compare to D15B3 engine. Main difference is exhaust manifold.
- The D15B7 engine has been adopted. Compare to D15B2 engine. Main difference is intake manifold.
- The D16Y1, D16Z9 engines have been adopted. For the service procedures, refer to the procedures for D16Z6 engine.

Engine Removal/Installation 5-2

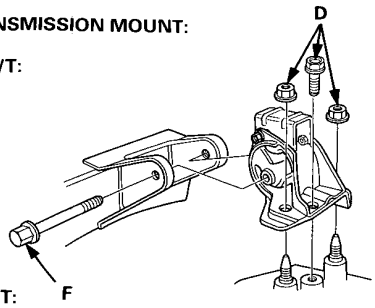
Outline of Model Change

- The mount and bracket bolts/nuts torque value specifications have been changed.

Mount and Bracket Bolts/Nuts Torque Value Specifications:
Except D16Z7 (4WD), B16A2 engines:

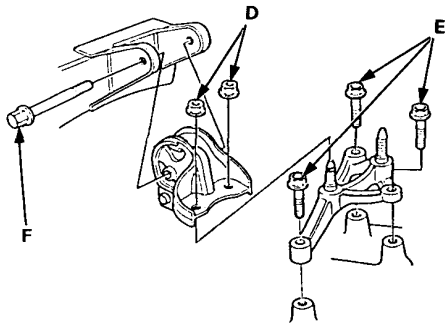
TRANSMISSION MOUNT:

M/T:

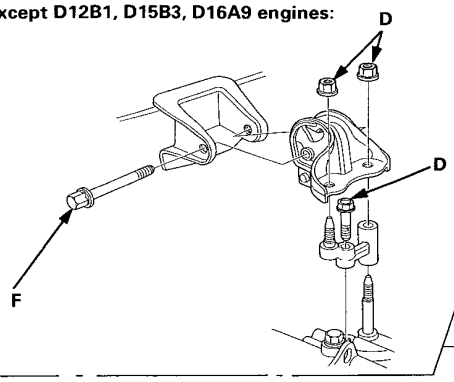


A/T:

D12B1, D15B3, D16A9 engines:

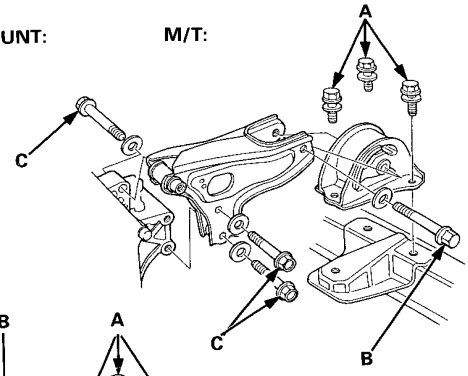


Except D12B1, D15B3, D16A9 engines:

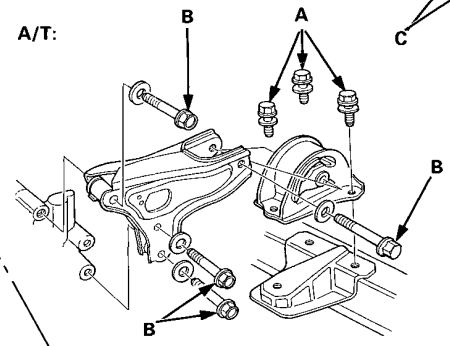


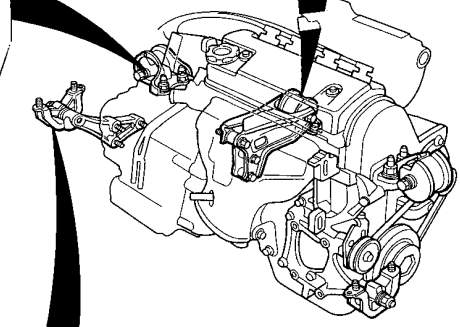
REAR MOUNT:

M/T:



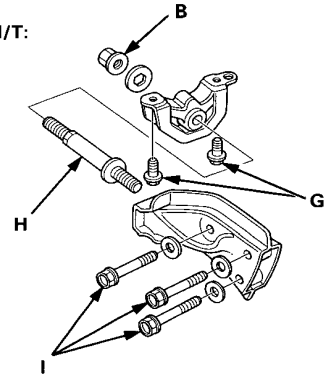
A/T:





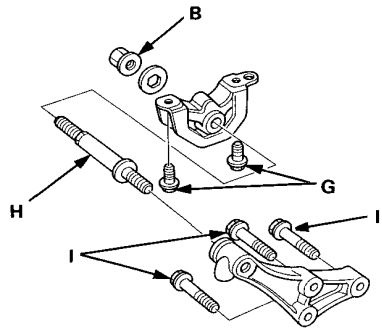
RIGHT FRONT MOUNT:

M/T:

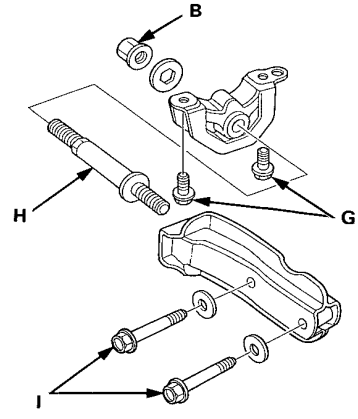


A/T:

D12B1, D15B3, D16A9 engines:

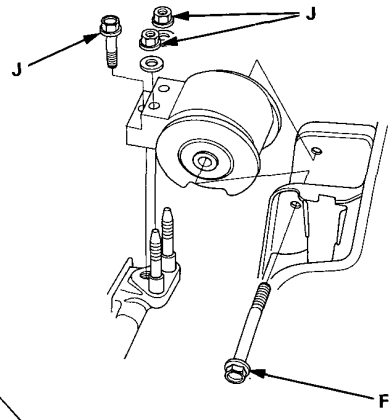


Except D12B1, D15B3, D16A9 engines:

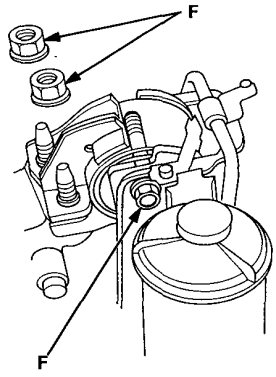


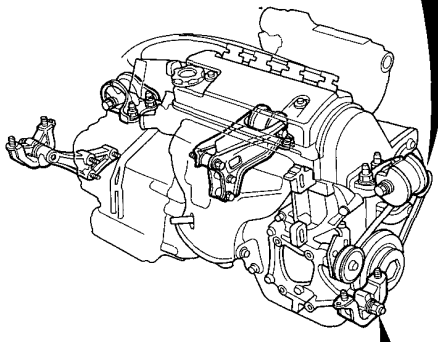
SIDE ENGINE MOUNT:

D15Z1, D16Z6, D16Z7 (2WD), D16Y1 engines:

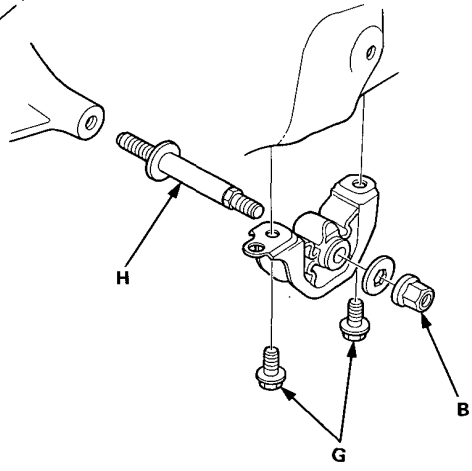


Except D15Z1, D16Z6, D16Z7 (2WD), D16Y1 engines:





LEFT FRONT MOUNT:



Torque Specifications:

A: 10 x 1.25 mm
60 N·m (6.0 kg-m, 43 lb-ft)
Replace.

B: 12 x 1.25 mm
60 N·m (6.0 kg-m, 43 lb-ft)
Replace.

C: 14 x 1.5 mm
85 N·m (8.5 kg-m, 61 lb-ft)
Replace.

D: 12 x 1.25 mm
65 N·m (6.5 kg-m, 47 lb-ft)

E: 10 x 1.25 mm
39 N·m (3.9 kg-m, 28 lb-ft)

F: 12 x 1.25 mm
75 N·m (7.5 kg-m, 54 lb-ft)

G: 10 x 1.25 mm
45 N·m (4.5 kg-m, 33 lb-ft)

H: 12 x 1.25 mm
85 N·m (8.5 kg-m, 61 lb-ft)

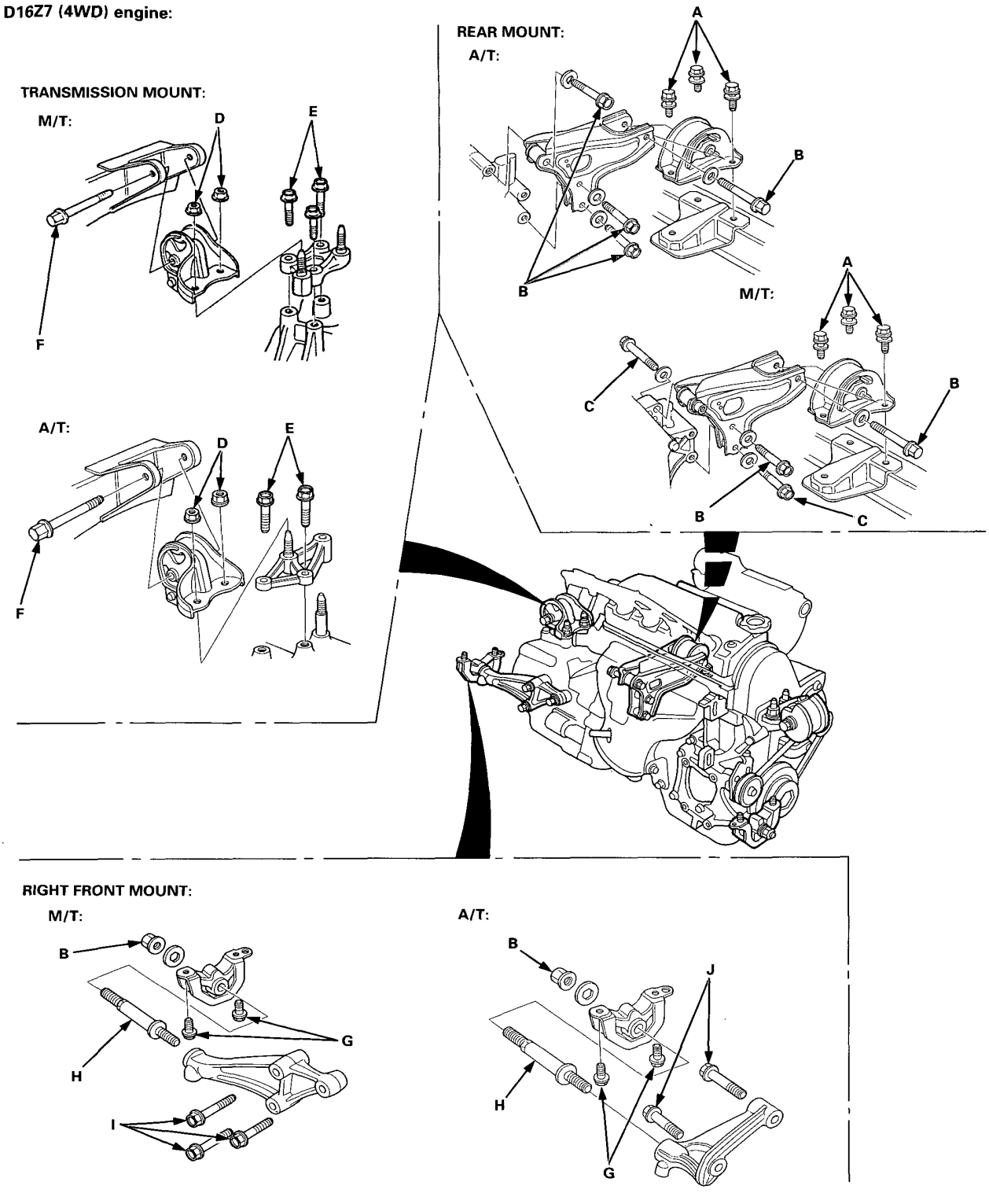
I: 12 x 1.25 mm
65 N·m (6.5 kg-m, 47 lb-ft)
Replace.

J: 10 x 1.25 mm
53 N·m (5.3 kg-m, 38 lb-ft)
Replace.

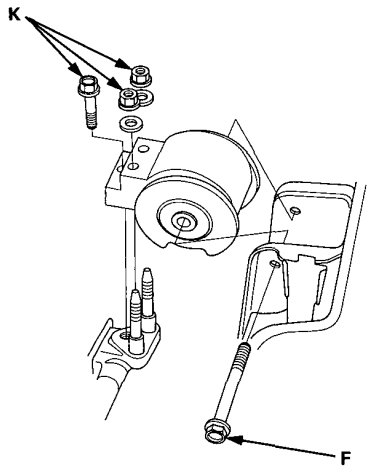
(cont'd)

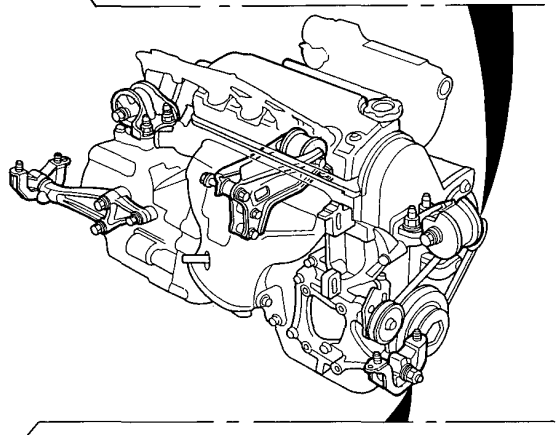
(cont'd)

Mount and Bracket Bolts/Nuts Torque Value Specifications:
D16Z7 (4WD) engine:

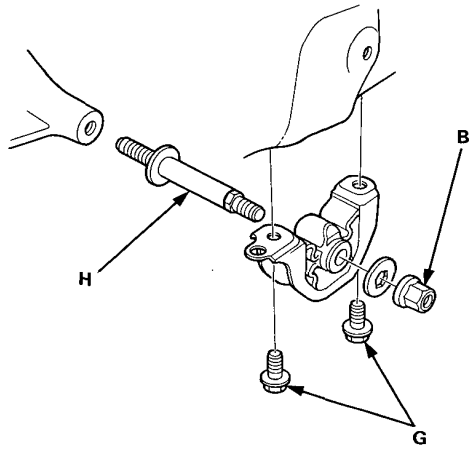


SIDE ENGINE MOUNT:





LEFT FRONT MOUNT:



Torque Specifications:

A: 10 x 1.25 mm
60 N·m (6.0 kg-m, 43 lb-ft)
Replace.

B: 12 x 1.25 mm
60 N·m (6.0 kg-m, 43 lb-ft)
Replace.

C: 14 x 1.5 mm
80 N·m (8.0 kg-m, 58 lb-ft)
Replace.

D: 12 x 1.25 mm
65 N·m (6.5 kg-m, 47 lb-ft)

E: 10 x 1.25 mm
39 N·m (3.9 kg-m, 28 lb-ft)

F: 12 x 1.25 mm
75 N·m (7.5 kg-m, 54 lb-ft)

G: 10 x 1.25 mm
45 N·m (4.5 kg-m, 33 lb-ft)

H: 12 x 1.25 mm
85 N·m (8.5 kg-m, 61 lb-ft)

I: 10 x 1.25 mm
55 N·m (5.5 kg-m, 40 lb-ft)
Replace.

J: 12 x 1.25 mm
65 N·m (6.5 kg-m, 47 lb-ft)
Replace.

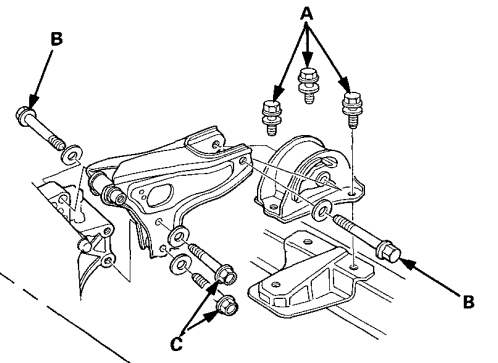
K: 10 x 1.25 mm
53 N·m (5.3 kg-m, 38 lb-ft)
Replace.

(cont'd)

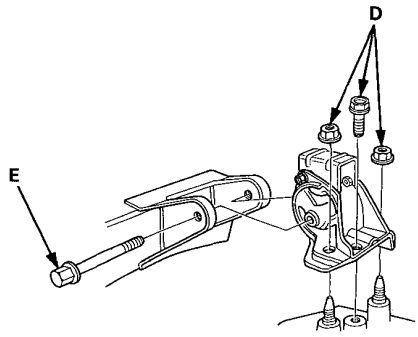
(cont'd)

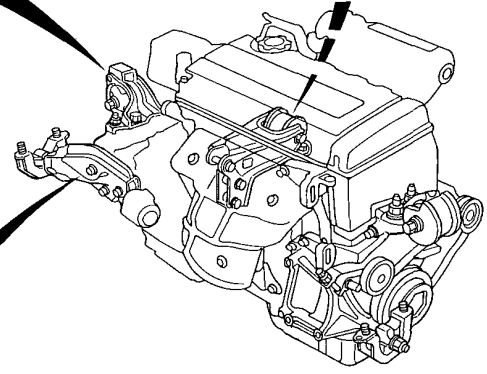
Mount and Bracket Bolts/Nuts Torque Value Specifications:
B16A2 engine:

REAR MOUNT:

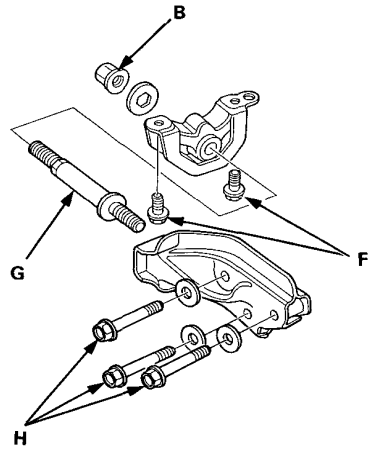


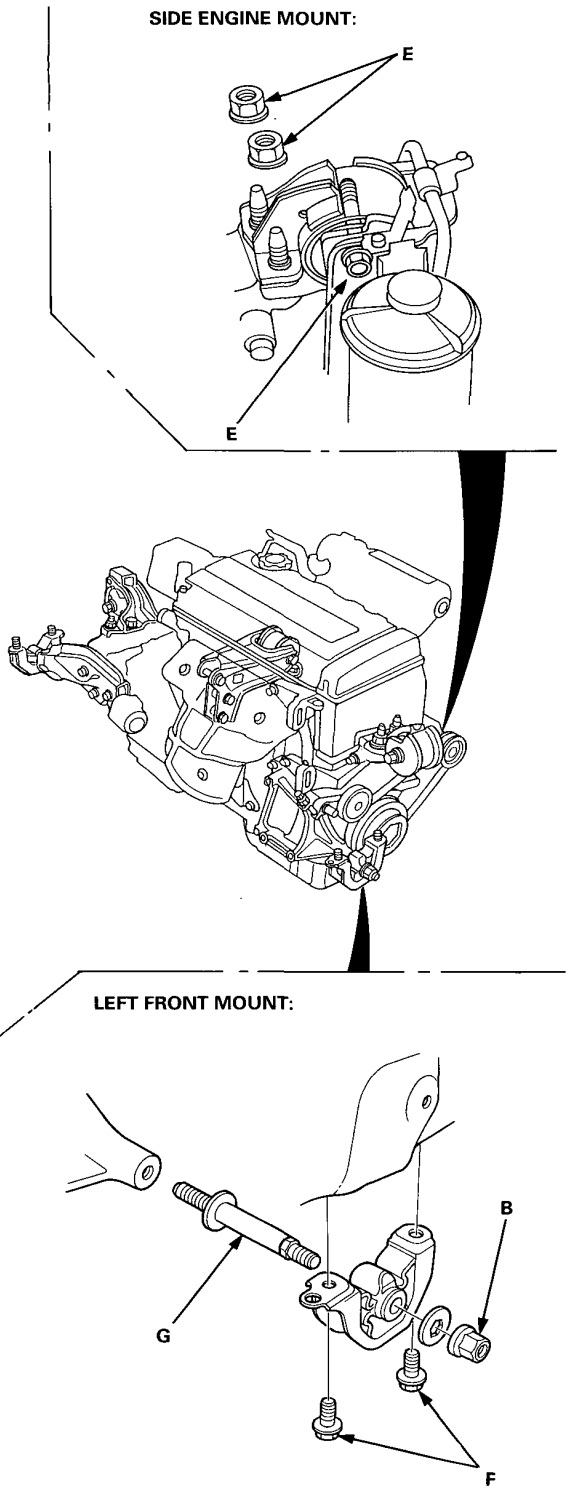
TRANSMISSION MOUNT:





RIGHT FRONT MOUNT:





Torque Specifications:

A: 10 x 1.25 mm
60 N·m (6.0 kg-m, 43 lb-ft)
Replace.

B: 12 x 1.25 mm
60 N·m (6.0 kg-m, 43 lb-ft)
Replace.

C: 14 x 1.5 mm
85 N·m (8.5 kg-m, 61 lb-ft)
Replace.

D: 12 x 1.25 mm
65 N·m (6.5 kg-m, 47 lb-ft)

E: 12 x 1.25 mm
75 N·m (7.5 kg-m, 54 lb-ft)

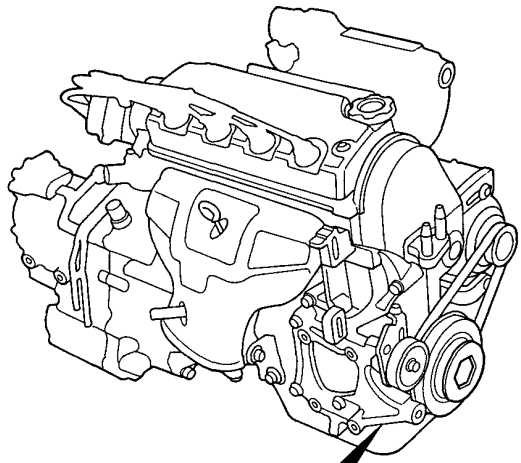
F: 10 x 1.25 mm
45 N·m (4.5 kg-m, 33 lb-ft)

G: 12 x 1.25 mm
85 N·m (8.5 kg-m, 61 lb-ft)

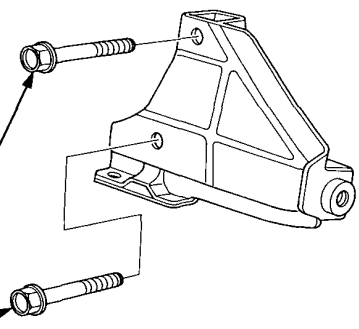
H: 12 x 1.25 mm
65 N·m (6.5 kg-m, 47 lb-ft)
Replace.

(cont'd)

(cont'd)



CARS NOT EQUIPPED A/C:



10 x 1.25 mm
55 N·m (5.5 kg-m, 40 lb-ft)
Replace.

Engine Lubrication

Engine Oil
Replacement 8-2

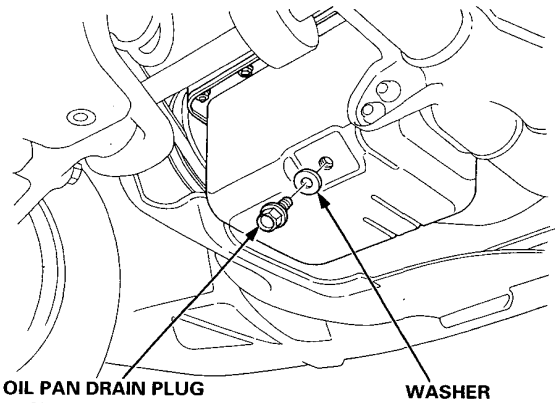
Outline of Model Change

- The recommended oil has been changed.

Engine Oil

Replacement

1. Warm up the engine.
2. Drain the engine oil.



OIL PAN DRAIN PLUG
45 N·m (4.5 kg-m, 33 lb-ft)
Do not overtighten.

WASHER
Replace.

3. Reinstall the drain plug with a new washer, and refill with the recommended oil.

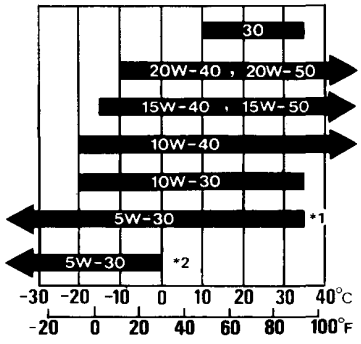
Requirement	API Service Grade: SF, SG or SH
Change	Every 10,000 km (6,000 miles) or 6 (12*3) months.

*3: European models

Capacity ℓ (US qt, Imp qt)

Engine type	After engine overhaul	At change including filter
D16A9 engine	4.3 (4.5, 3.8)	3.6 (3.8, 3.2)
B16A2 engine	4.8 (5.1, 4.2)	4.0 (4.2, 3.5)
Except D16A9, B16A2 engines	4.0 (4.2, 3.5)	3.3 (3.5, 2.9)

Engine Oil SAE Viscosity for Outside Temperature Ranges.



Ambient temperature ranges

*1: Except D16A7, D16A9, B16A2 engines
*2: D16A7, D16A9, B16A2 engines

Intake Manifold/Exhaust System

Intake Manifold
Replacement 9-2
Exhaust Manifold
Replacement 9-3

Outline of Model Change

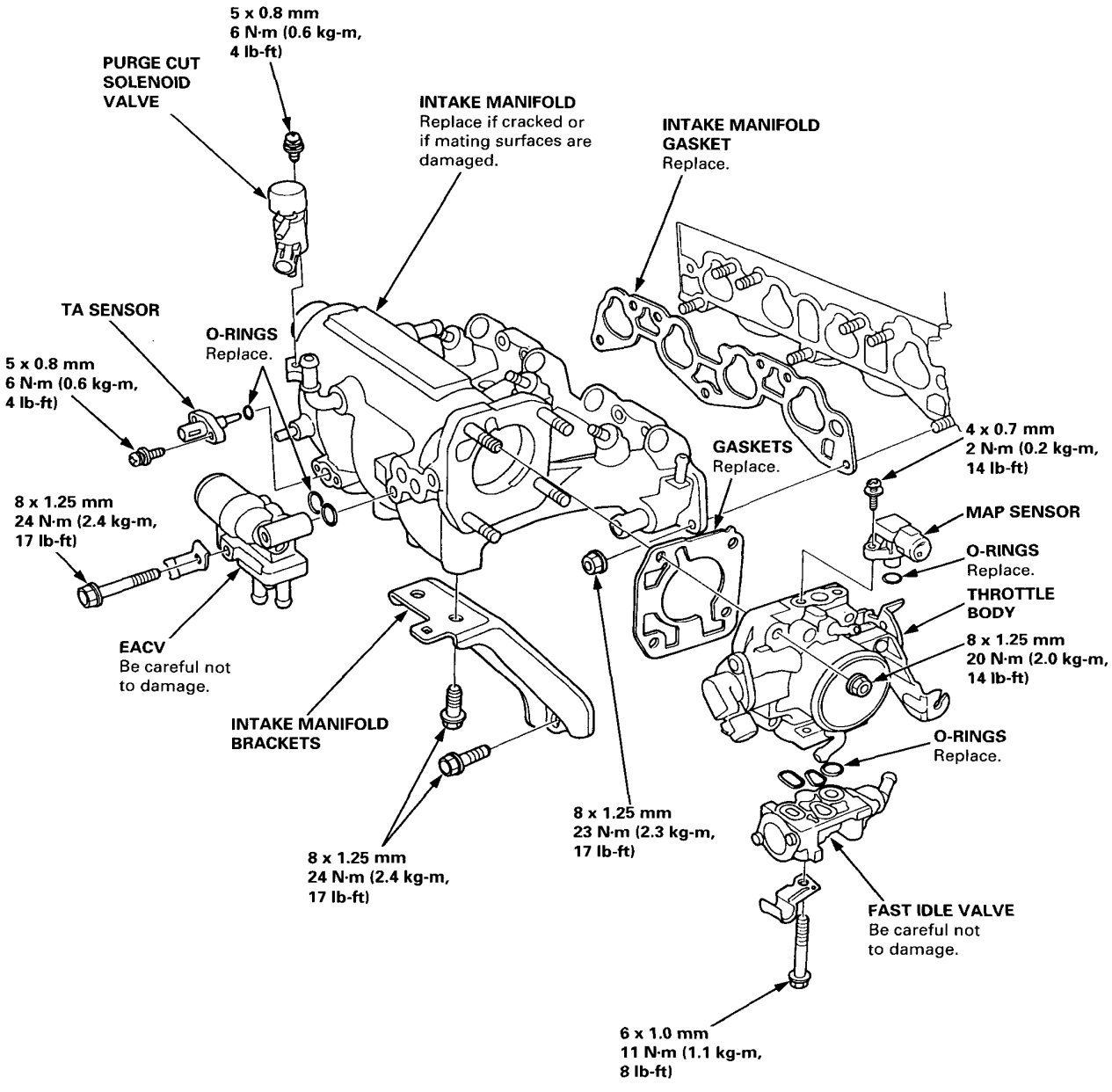
- The D15Z2, D15B7 engines have been adopted.

Intake Manifold

Replacement

NOTE: Use new gaskets and O-rings when reassembling.

D15B7 engine:



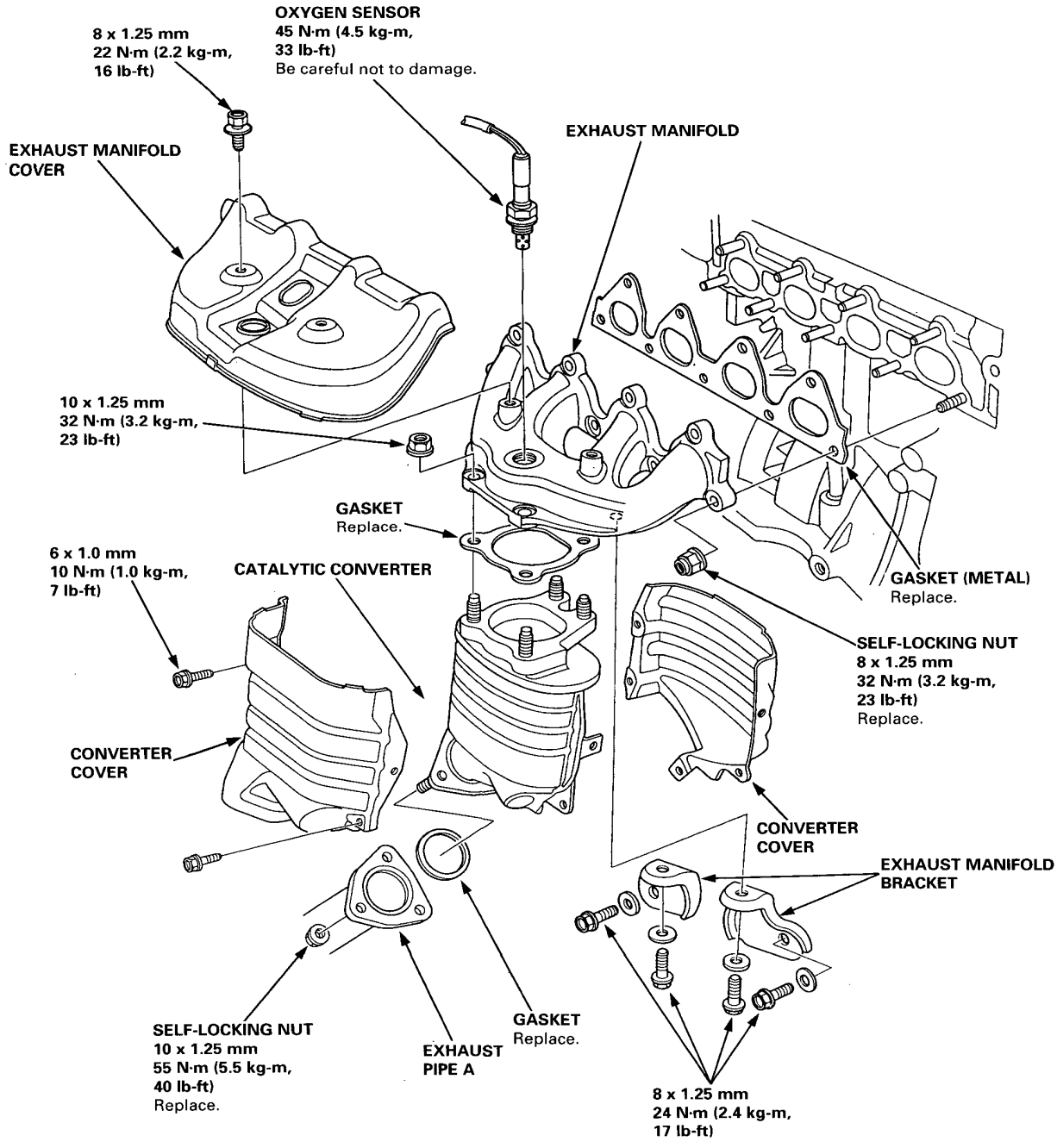
Exhaust Manifold

Replacement

NOTE: Use new gaskets and new self-locking nuts when reassembling.

CAUTION: In handling a metal gasket, care should be taken not to bend it or damage the contact surface of the gasket.

D15Z2 engine:



SUPPLEMENTAL RESTRAINT SYSTEM (SRS) (If Fuel and Emissions maintenance is required)

Some model versions of the Civic include a driver's airbag, located in the steering wheel hub. In addition, the KB model has a front passenger's airbag located in the dashboard above the glove box. There are two types of SRS: Type II (SRS unit is part of the airbag assembly), which is used for models without front passenger's airbag (all except KB model), and Type III (SRS unit is not part of the airbag assembly, and has built-in sensors), which is used for models with front passenger's airbag (KB model). Information necessary to safely service the SRS is included in this Shop Manual. Items marked with an asterisk (*) on the contents page include, or are located near, SRS components. Servicing, disassembling or replacing these items will require special precautions and tools, and should therefore be done by an authorized Honda dealer.

⚠ WARNING

- **To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal collision, all SRS service work must be performed by an authorized Honda dealer.**
- **Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional activation of the airbags.**
- **Do not bump the SRS unit. Otherwise, the system may fail in case of a collision, or the airbags may deploy when the ignition switch is ON (II) (SRS Type III).**
- **All SRS electrical wiring harnesses are covered with yellow insulation. Related components are located in the steering column, front console, dashboard, dashboard lower panel, and, in case of the KB model, in the dashboard above the glove box. Do not use electrical test equipment on these circuits.**
- **Service work nearby and in the areas listed below may affect the SRS and must therefore be performed by an authorized Honda dealer.**

SRS Type II:

- Steering wheel (Be careful not to bump the steering wheel as the SRS unit (sensors), inflator, etc. are located in it.)
- Behind the dashboard
- Under-dash fuse/relay box

SRS Type III:

- Steering wheel
- Behind the dashboard
- Under-dash fuse/relay box
- Front console
- Car stereo units and other accessories
- A/C heater

Fuel and Emissions

Carbureted Engine

Outline of Model Changes

- The D15Z2 engine has been added for KQ model, refer to D13B2 engine in the base Shop Manuals.

Fuel-Injected Engine
- **Special Tools** 11-2
- **Component Locations**
  - **Index** 11-3
- **System Description**
  - **Vacuum Connections** 11-4
  - **Electrical Connections** 11-6
- **Troubleshooting**
  - **Self-diagnostic Procedures** 11-9

PGM-FI Control System
- **Troubleshooting Flowcharts**
  - **Electronic Control Unit (ECU)** 11-12
  - **Oxygen Sensor** 11-18
  - **Fuel Supply System** 11-21
  - **Manifold Absolute Pressure (MAP) Sensor** 11-23
  - **Ignition Output Signal** 11-28
  - **Atmospheric Pressure (PA) Sensor** 11-30

Idle Control System
- **Idle Speed Setting** 11-31

Fuel Supply System
- **Fuel Pressure [D15B2 engine]** 11-32
- **Main Relay** 11-33

Air Intake System
- **Throttle Body** 11-35

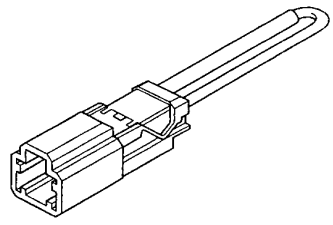
Emission Control System
- **Exhaust Gas Recirculation System [D15Z1 engine]** 11-36

Outline of Model Changes

- The special tool (SCS short connector) has been added.
- The D15B7 engine has been added for KQ, KB model.
- The D16Y1 engine has been added for KQ model, refer to D16Z6 engine.
- The D16Z9 engine has been added for KB model, refer to D16Z6 engine.
- The Electronic Control Unit (ECU) (Except D15B2 engine) has been modified, and changed following troubleshooting flowcharts:
  - — Oxygen Sensor
  - — Fuel Supply System
  - — Atmospheric Pressure (PA) Sensor
  - — Exhaust Gas Recirculation System (D15Z1 engine)
  - — Idle Speed Setting
- The main wire harness (SCS, Ignition Output Signal, Main Relay circuit) has been changed.
- The main wire harness (MAP sensor circuit) has been changed for B16A2 engine.
- The fuel pressure has been changed for D15B2 engine.
- The throttle body disassembly has been changed.
- The throttle body has been modified for B16A2 engine.

Special Tools

Ref. No.	Tool Number	Description	Q'ty	Remarks
①	07PAZ – 0010100	SCS Short Connector	1	

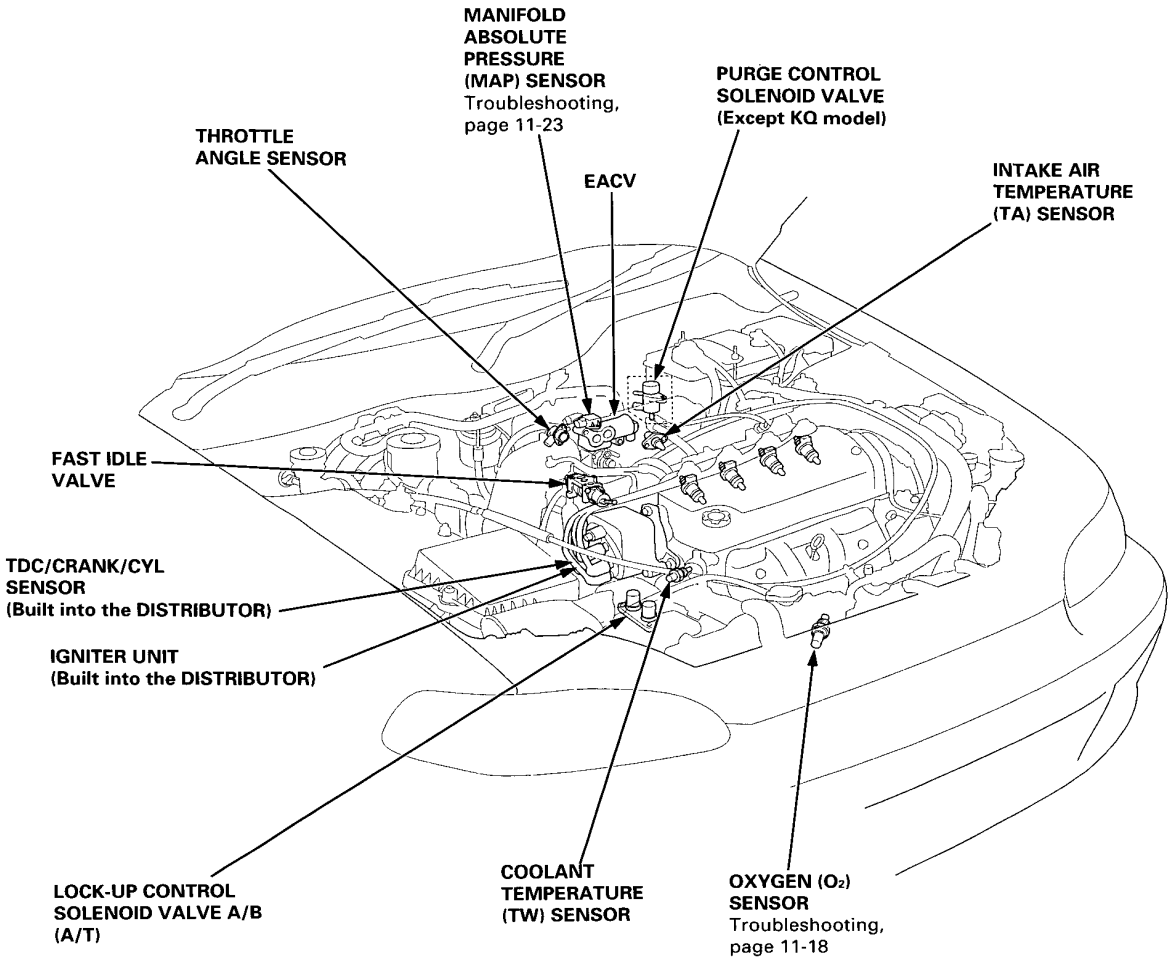


①

Component Locations

Index

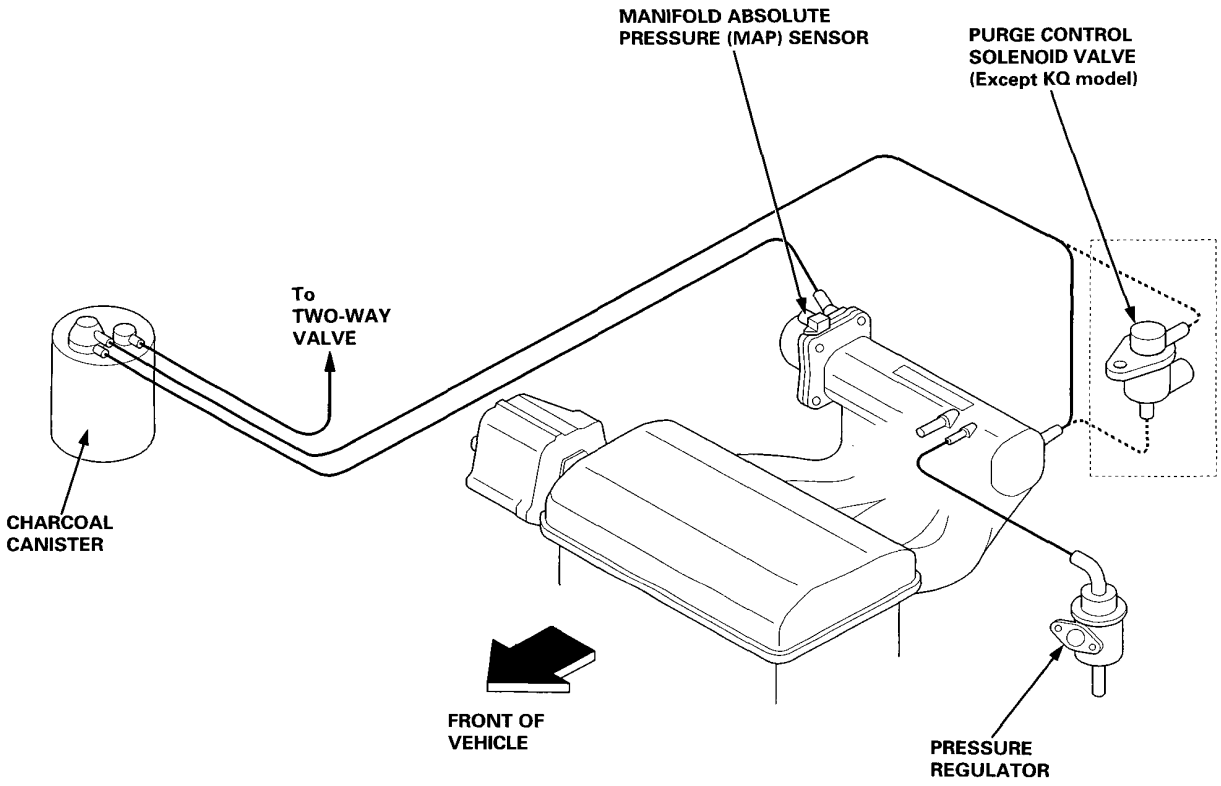
D15B7 engine:


MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR Troubleshooting, page 11-23
PURGE CONTROL SOLENOID VALVE (Except KQ model)
THROTTLE ANGLE SENSOR
EACV
INTAKE AIR TEMPERATURE (TA) SENSOR
FAST IDLE VALVE
TDC/CRANK/CYL SENSOR (Built into the DISTRIBUTOR)
IGNITER UNIT (Built into the DISTRIBUTOR)
LOCK-UP CONTROL SOLENOID VALVE A/B (A/T)
COOLANT TEMPERATURE (TW) SENSOR
OXYGEN (O_2) SENSOR Troubleshooting, page 11-18

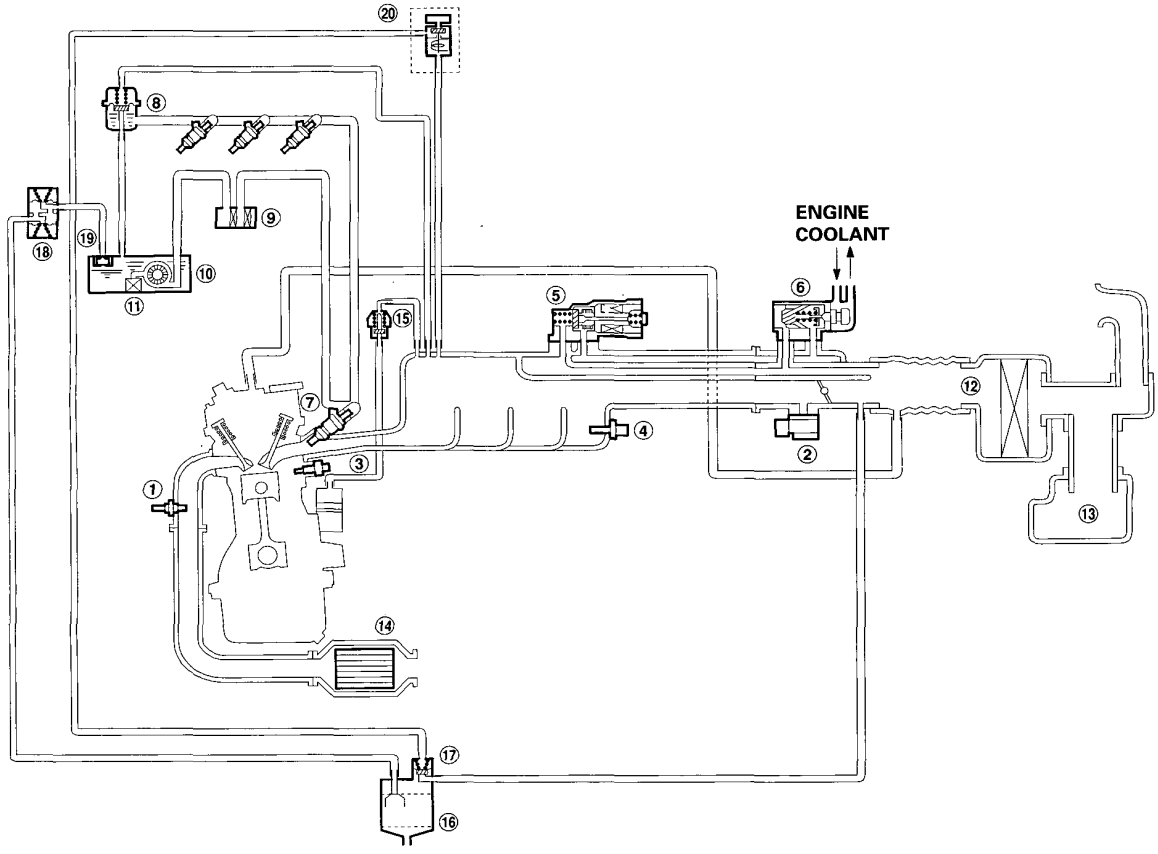
System Description

Vacuum Connections

D15B7 engine:



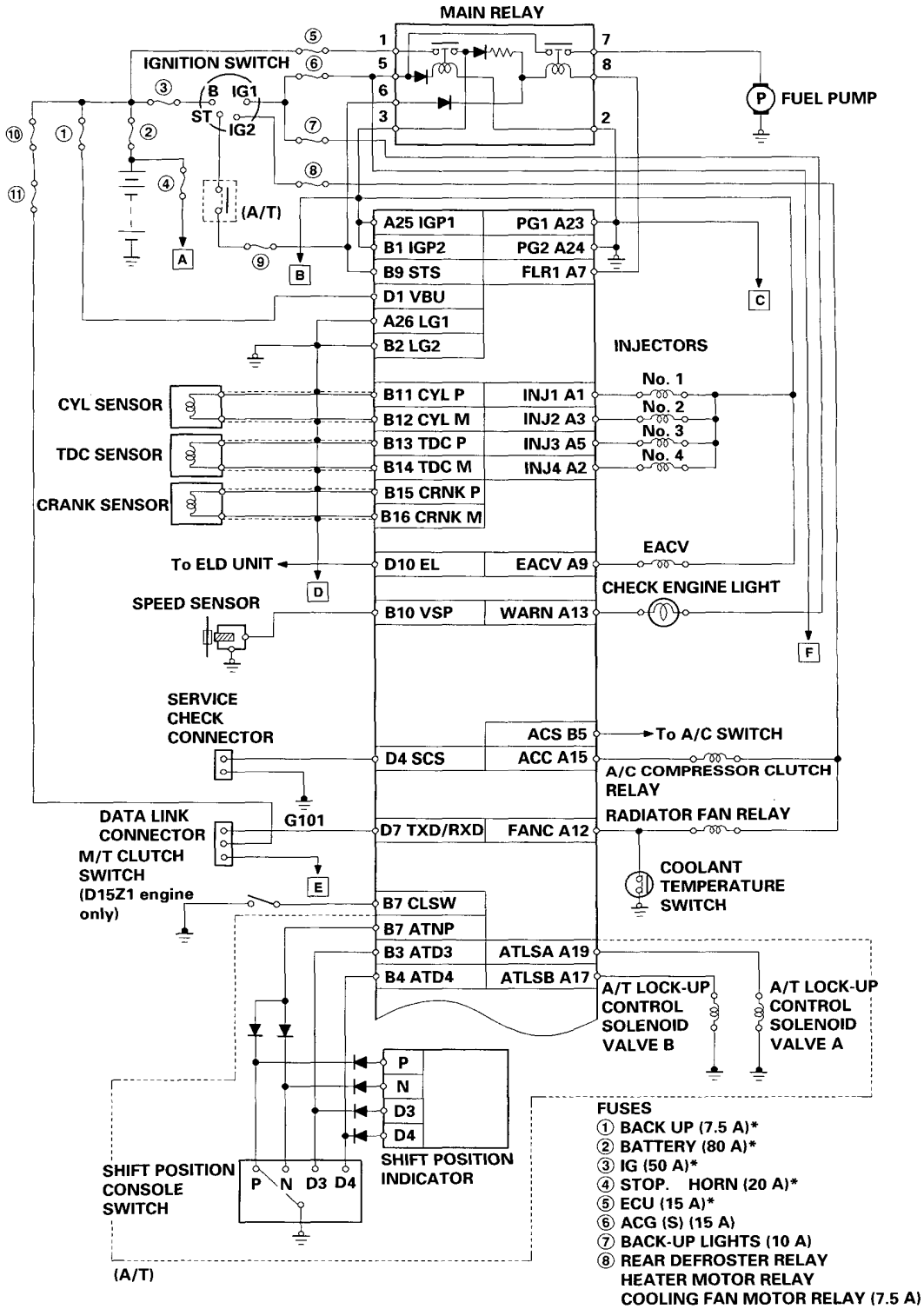
D15B7 engine:

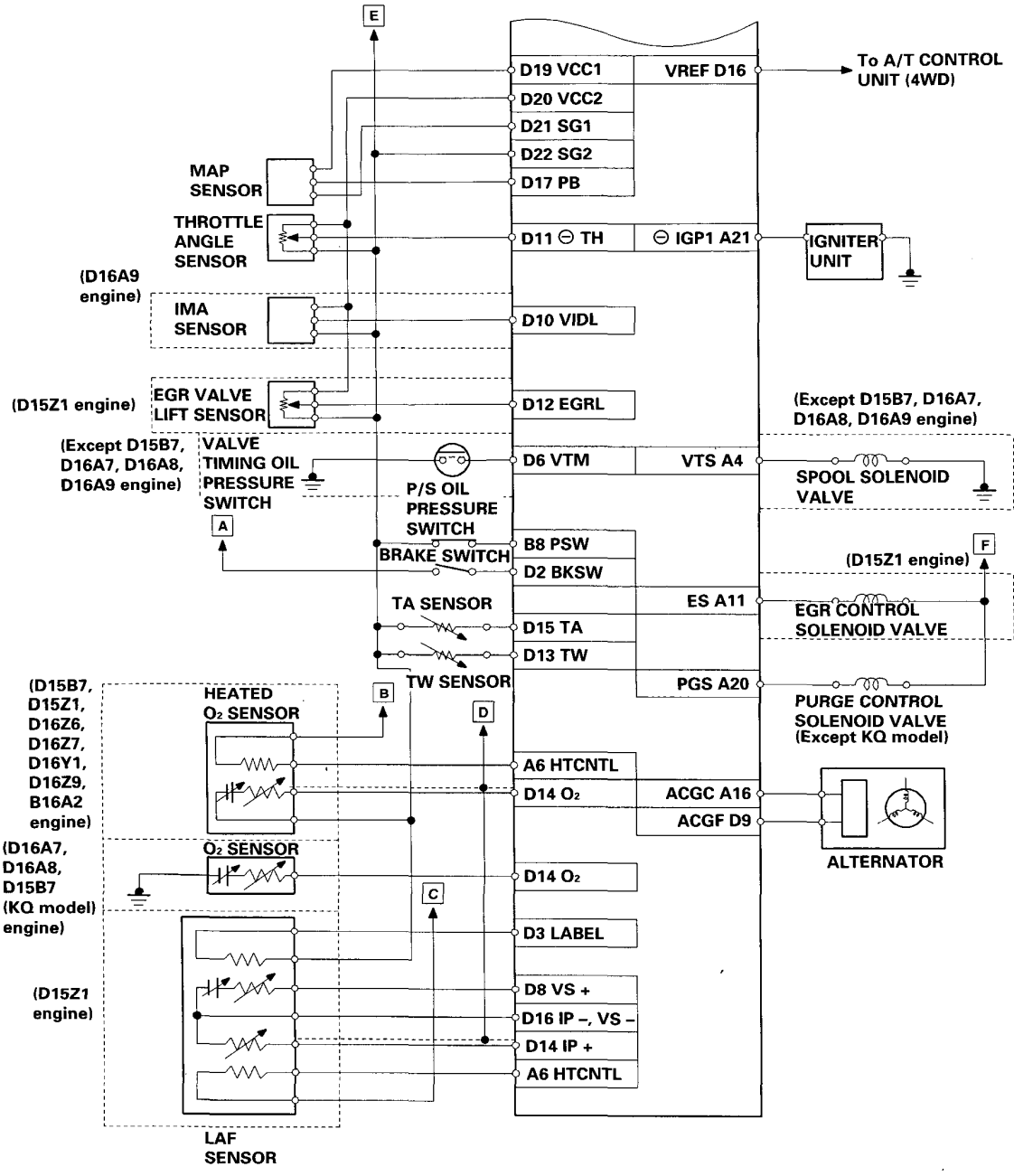


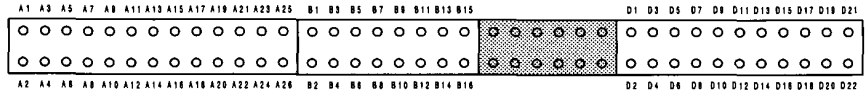
① OXYGEN (O_2) SENSOR
② MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
③ COOLANT TEMPERATURE (TW) SENSOR
④ INTAKE AIR TEMPERATURE (TA) SENSOR
⑤ ELECTRONIC AIR CONTROL VALVE (EACV)
⑥ FAST IDLE VALVE
⑦ FUEL INJECTOR
⑧ PRESSURE REGULATOR
⑨ FUEL FILTER
⑩ FUEL PUMP
⑪ FUEL TANK
⑫ AIR CLEANER
⑬ RESONATOR
⑭ CATALYTIC CONVERTER
⑮ PCV VALVE
⑯ CHARCOAL CANISTER
⑰ PURGE CONTROL DIAPHRAGM VALVE
⑱ TWO-WAY VALVE
⑲ FUEL CUT VALVE
⑳ PURGE CONTROL SOLENOID VALVE (Except KQ model)

System Description

Electrical Connections [Except D15B2 engine]

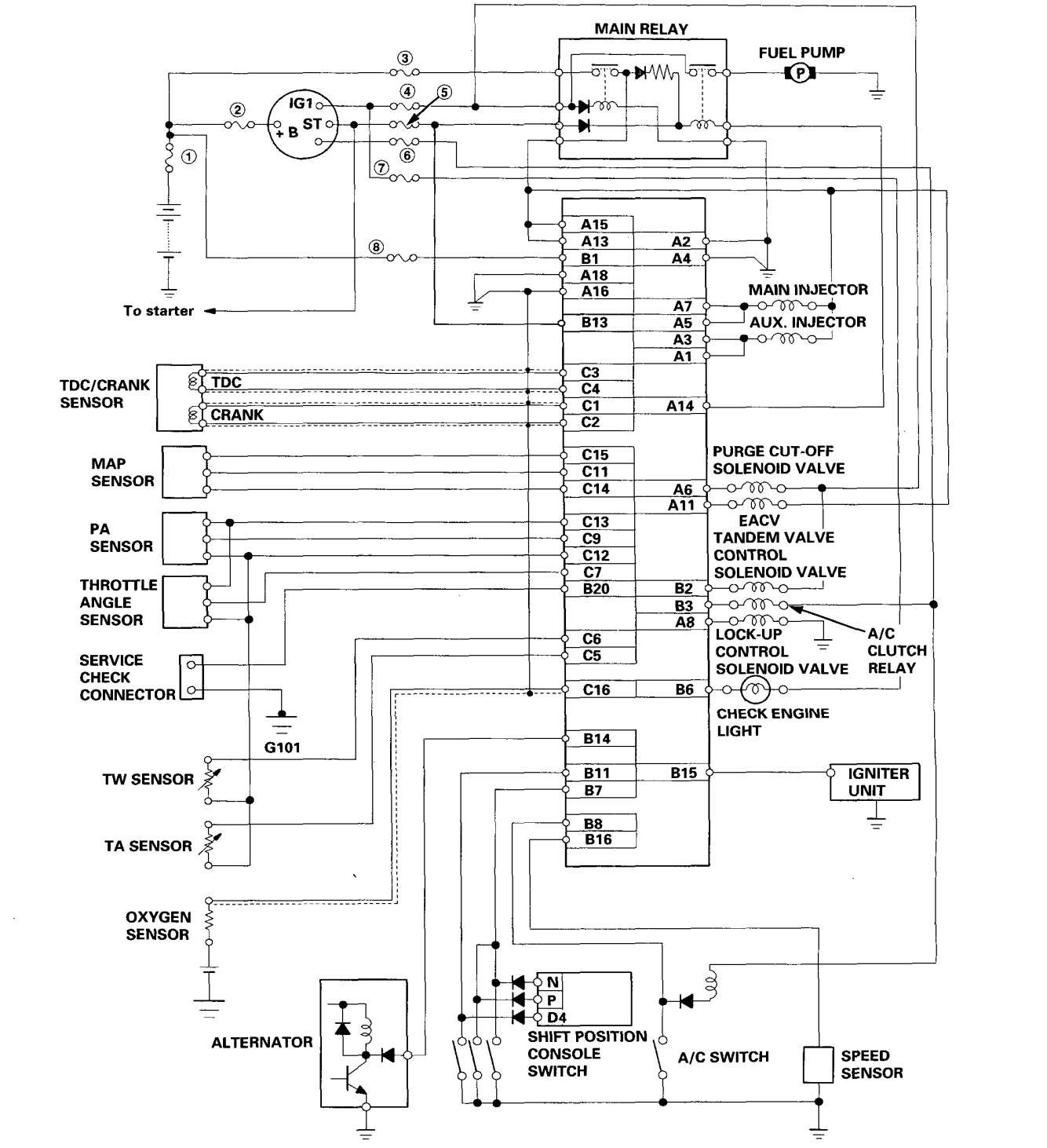


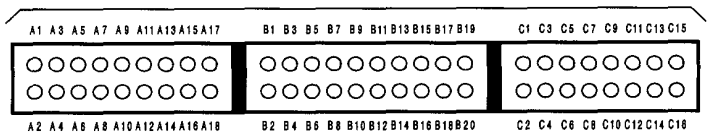




TERMINAL LOCATION

Electrical Connections [D15B2 engine]





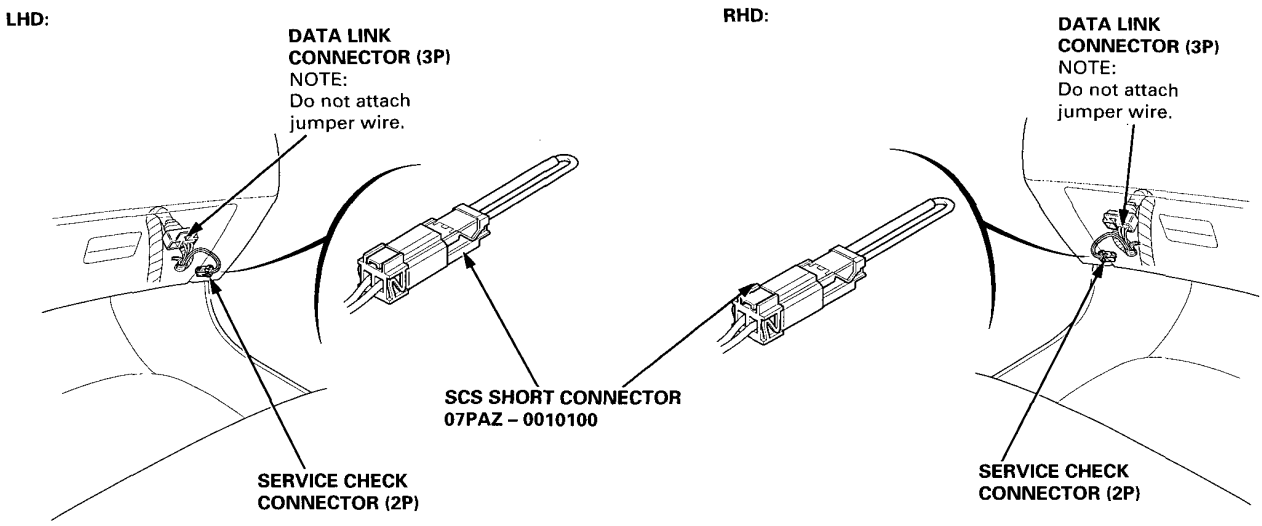
TERMINAL LOCATION

FUSES
① BATTERY (80 A)*
② IG (50 A)*
③ ECU (15 A)*
④ ACG (S) (15 A)
⑤ STARTER SIGNAL (7.5 A)
⑥ REAR DEFROSTER RELAY
HEATER MOTER RELAY
COOLING FAN MOTOR RELAY (7.5 A)
⑦ BACK-UP LIGHTS (10 A)
⑧ BACK-UP (7.5 A)*
*: UNDER-HOOD FUSE/RELAY BOX

Self-diagnostic Procedures

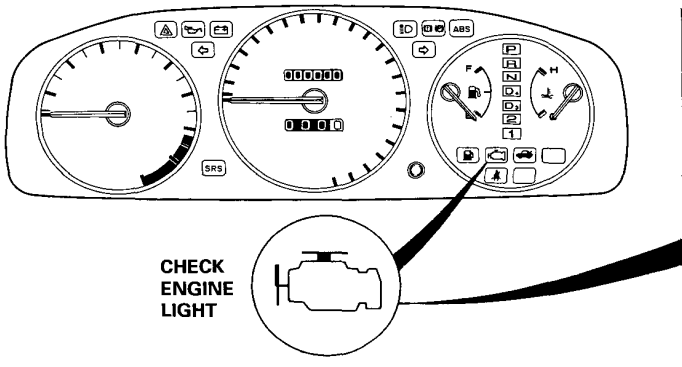
I. When the Check Engine light has been reported on, do the following:

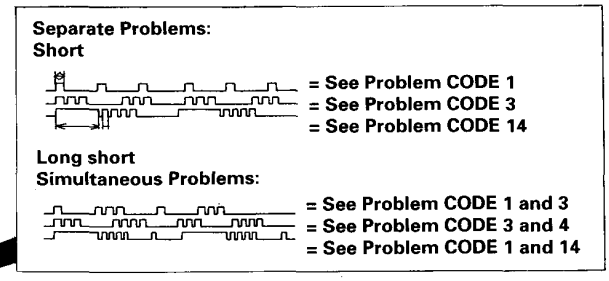
1. Connect the SCS short connector to Service Check Connector as shown (The 2P Service Check Connector is located under the dash on the passenger side of the car). Turn the ignition switch on.



2. Note the CODE: the Check Engine light indicates a failure code by the length and number of blinks. The Check Engine light can indicate simultaneous component problems by blinking separate codes, one after another. Problem codes 1 through 9 are indicated by individual short blinks. Problem codes 10 through 48 are indicated by a series of long and short blinks. The number of long blinks equals the first digit, the number of short blinks equals the second digit. Sometimes the first blink is difficult to see; always count the blinks at least twice to verify the code.

NOTE:
Two Trip Detection Method
To prevent false indications, the Two Trip Detection Method is used for the O_2 sensor, fuel metering-related EGR system self-diagnostic functions. When an abnormality occurs, the ECU stores it in its memory. When the same abnormality recurs after the ignition switch is turned OFF and ON again, the ECU informs the driver by lighting the Check Engine light.
However, to ease troubleshooting, this function is cancelled when you short the service check connector. The Check Engine light will then blink immediately when an abnormality occurs.




Separate Problems:
Short
= See Problem CODE 1
= See Problem CODE 3
= See Problem CODE 14
Long short
Simultaneous Problems:
= See Problem CODE 1 and 3
= See Problem CODE 3 and 4
= See Problem CODE 1 and 14

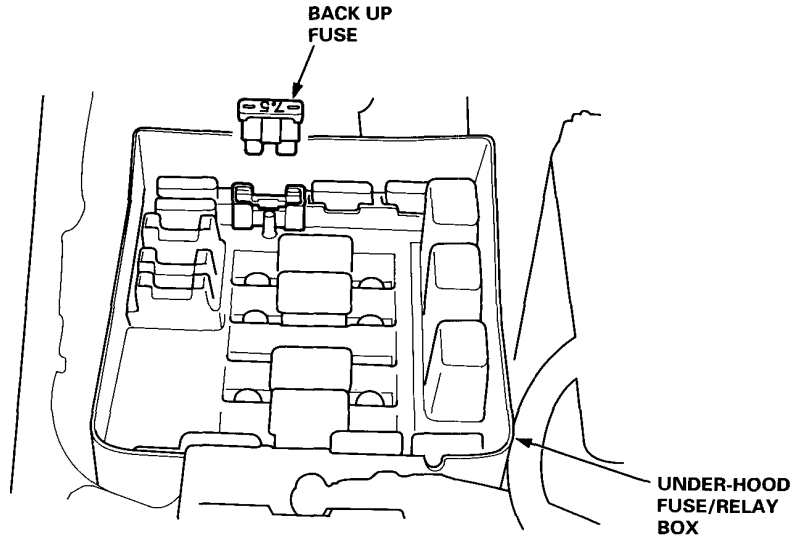
(cont'd)

Self-diagnostic Procedures (cont'd)

II. ECU Reset Procedure

1. Turn the ignition switch off.
2. Remove the BACK UP fuse (7.5 A) from the under-hood fuse/relay box for 10 seconds to reset the ECU.

   NOTE: Disconnecting the BACK UP fuse also cancels the radio preset stations and the clock setting. Make note of the radio presets before removing the fuse so you reset them.



III. Final Procedure (this procedure must be done after any troubleshooting)

1. Remove the SCS Short Connector.

   NOTE: If the SCS Short Connector is connected and there are no CODE stored in the ECU, the Check Engine light will stay on.

2. Do the ECU Reset Procedure.
3. Set the radio preset stations and the clock setting.

SELF-DIAGNOSIS INDICATOR BLINKS	SYSTEM INDICATED	PAGE (Except D15B2 engine)	PAGE (D15B2 engine)
0	ECU	11-12	11-15
1	OXYGEN SENSOR	11-18, 20	——
3	MANIFOLD ABSOLUTE PRESSURE (MAP SENSOR)	11-23	——
5		11-26	——
4	CRANK ANGLE (CRANK SENSOR)	——	——
6	COOLANT TEMPERATURE (TW SENSOR)	——	——
7	THROTTLE ANGLE	——	——
8	TDC POSITION (TDC SENSOR)	——	——
9	No. 1 CYLINDER POSITION (CYL SENSOR)	——	——
10	INTAKE AIR TEMPERATURE (TA SENSOR)	——	——
11	IMA SENSOR (D16A9 engine)	——	——
12	EXHAUST GAS RECIRCULATION SYSTEM (EGR)	11-36	——
13	ATMOSPHERIC PRESSURE (PA SENSOR) [D15B7 engine, D15Z1/D16Z6 engine (KS, model)]	11-30	——
14	ELECTRONIC AIR CONTROL (EACV)	——	——
15	IGNITION OUTPUT SIGNAL	11-28	——
16	FUEL INJECTOR (D15B2 engine)	——	——
17	VEHICLE SPEED SENSOR	——	——
19	A/T LOCK-UP CONTROL SOLENOID VALVE A/B	——	——
20	ELECTRICAL LOAD DETECTOR (ELD)	——	——
21	SPOOL SOLENOID VALVE	——	——
22	VALVE TIMING OIL PRESSURE SWITCH	——	——
41	OXYGEN SENSOR HEATER (D15B7, D16Z6, D16Z7, B16A2 engine)	——	——
41	LAF SENSOR HEATER (D15Z1 engine)	——	——
43	FUEL SUPPLY SYSTEM (D15B2, D15B7, D15Z1, D16Z6, D16Z7, D16Z9, B16A2, D16Y1 engine)	11-21	——
48	LAF SENSOR (D15Z1 engine)	——	——

- If codes other than those listed above are indicated, verify the code. If the code indicated is not listed above, replace the ECU.
- The Check Engine light may come on, indicating a system problem when, in fact, there is a poor or intermittent electrical connection. First, check the electrical connections, clean or repair connections if necessary.
- The Check Engine light and D4 indicator light may light simultaneously when the self-diagnosis indicator blinks 6, 7 and 17 Check the PGM-FI system according to the PGM-FI control system troubleshooting, then recheck the D4 indicator light.
- The Check Engine light does not come on when there is a malfunction in the Electric Load Detector circuits. However, it will indicate the codes when the SCS Short Connector is connected.
- For reference pages not listed with the respective Self-Diagnosis Indicator Blinks, refer to base Shop Manuals.

Troubleshooting Flowchart — ECU

Check Engine light stays on or comes on after two seconds.

Turn the ignition switch ON.

Connect the SCS short connector to the service check connector (see page 11-9).

Does Check Engine light indicate any CODE?

YES → **Go to self-diagnostic procedures.**

NO

Remove the SCS short connector from the service check connector.

Try to start the engine.

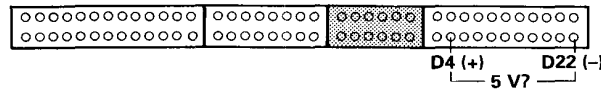
Did the engine start?

YES → Turn the ignition switch OFF.

Connect the test harness between the ECU and connectors.

Turn the ignition switch ON.

Measure voltage between D4 (+) terminal and D22 (–) terminal.



Is there approx. 5 V? (4WD model: 12 V?)

YES → Connect the SCS short connector to the service check connector.

Measure voltage between D4 (+) terminal and body ground.

Is there approx. 5 V? (4WD model: 12 V?)

YES → *

- **Repair open in BRN wire between ECU (D4) and service check connector.**
- **Repair open in BLK wire between service check connector and G101.**

NO

Remove the SCS short connector from the service check connector.

(To page 11-13)

NO → **Repair short to body ground in BRN wire between the ECU (D4) and service check connector.**

Remove and inspect the ECU (15A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

NO → **Replace the fuse.**

YES

(To page 11-13)

NOTE: When there is no code stored, the Check Engine light will stay on if the service check connector is shorted.

*NOTE: After repair, disconnect the SCS short connector, test drive the car, and recheck the Check Engine light for a code.

(From page 11-12)

Inspect the ACG (S) (15 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

NO → **Replace the fuse.**

YES

Turn the ignition switch ON.

Disconnect the 3P connector of each sensor one at a time:
- MAP sensor
- EGR valve lift sensor (D15Z1 engine)
- Throttle angle sensor
- IMA (D16A9 engine)

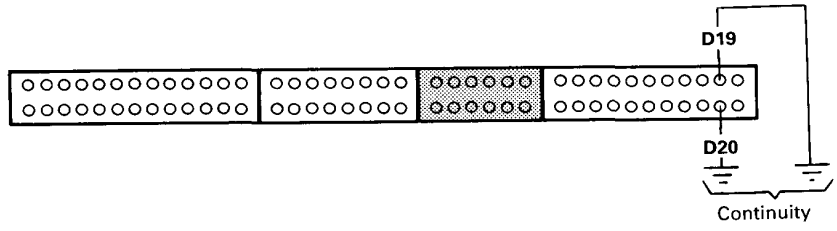
Does Check Engine light remain ON?

NO → **Replace the sensor that caused the light to go out.**

YES

Turn the ignition switch OFF.

Connect the test harness. Disconnect the "D" connector from the ECU only, not the main wire harness.



Check for continuity between body ground terminals D19, D20.

Does continuity exist?

YES →
- **Repair short to body ground in YEL/RED or YEL/GRN wire between ECU (D19) and MAP sensor.**
- **Repair short to body ground in YEL/WHT wire between ECU (D20) and throttle angle sensor or EGR valve lift sensor (D15Z1 engine) or IMA (D16A9 engine).**

NO

Reconnect all the sensor connectors.
Reconnect the "D" connector to the ECU.

Turn the ignition switch ON.

(To page 11-14)

(From page 11-12)

Turn the ignition switch OFF.

Disconnect "A" connector from the ECU.

Turn the ignition switch ON.

Is the Check Engine light ON?

NO → **Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.**

YES

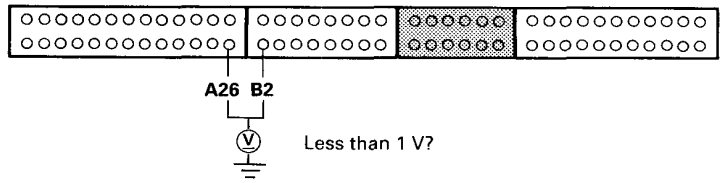
Repair short to body ground in GRN/ORN wire between the ECU (A13) and Check Engine light.

(cont'd)

Troubleshooting Flowchart — ECU (cont'd)

(From page 11-13)

Measure voltage between body ground and the following terminal individually: ·A26, ·B2.



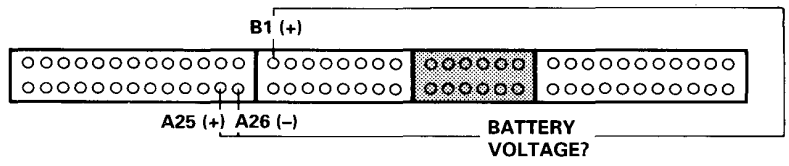
Is there less than 1 V?

NO → **Repair open in BLK/RED (A26) or BRN/BLK (B2) and G101.**

YES

Measure voltage between A26 (–) and the following: B1 (+) and A25 (+).

Measure voltage between A26 (–) and the following: B1 (+) and A25 (+).



Is there battery voltage?

NO →
- **Repair open in YEL/BLK wire between ECU (A25, B1) and main relay.**
- **Check main relay and wiring connectors at main relay.**

YES

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

Troubleshooting Flowchart — ECU [D15B2 engine]

Check Engine light stays on or comes on after two seconds.

Turn the ignition switch ON.

Connect the SCS short connector to the service check connector (see page 11-9).

Does Check Engine light indicate any CODE?

YES → **Go to self-diagnostic procedures.**

NO

Remove the SCS short connector from the service check connector.

Try to start the engine.

Did the engine start?

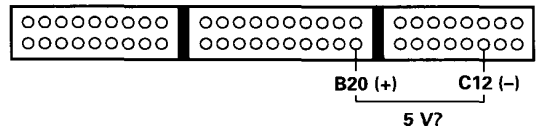
YES → Turn the ignition switch OFF.

NO

Connect the test harness between the ECU and connectors.

Turn the ignition switch ON.

Measure voltage between B20 terminal and C12 (–) terminal.



Is there approx. 5 V?

YES → Connect the SCS short connector to the service check connector.

NO

Repair short to body ground in BRN wire between the ECU (B20) and service check connector.

Measure voltage between B20 (+) terminal and body ground.

Is there approx. 5 V?

YES → *

- **Repair open in BRN wire between ECU (B20) and service check connector.**
- **Repair open in BLK wire between service check connector and G101.**

NO

Remove the SCS short connector from the service check connector.

(To page 11-16)

Remove and inspect the ECU (15 A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

NO → **Replace the fuse.**

YES

(To page 11-16)

NOTE: When there is no code stored, the Check Engine light will stay on if the service check connector is shorted.

*NOTE: After repair, disconnect the SCS short connector, test drive the car, and recheck the Check Engine light for a code.

(cont'd)

Troubleshooting Flowchart — ECU [D15B2 engine] (cont'd)

(From page 11-15)

Inspect the ACG (S) (15 A) fuse in the under-dash fuse relay box.

Is the fuse OK?

NO → **Replace the fuse.**

YES

Turn the ignition switch ON.

Disconnect the 3P connector of each sensor one at a time:
- MAP sensor
- Throttle angle sensor

Does Check Engine light remain ON?

NO → **Replace the sensor that caused the light to go out.**

YES

Turn the ignition switch OFF.

Connect the test harness.
Disconnect the "C" connector from the ECU only, not the main wire harness.

Check for continuity between body ground terminals C13, C15.

Does continuity exist?

YES →
- **Repair short to body ground in YEL/GRN wire between ECU (C15) and MAP sensor.**
- **Repair short to body ground in YEL/WHT wire between ECU (C13) and throttle angle sensor.**

NO

Reconnect all the sensor connectors.
Reconnect the "C" connector to the ECU.

Turn the ignition switch ON.

(To page 11-17)

(From page 11-15)

Turn the ignition switch OFF.

Disconnect "A" connector from the ECU.

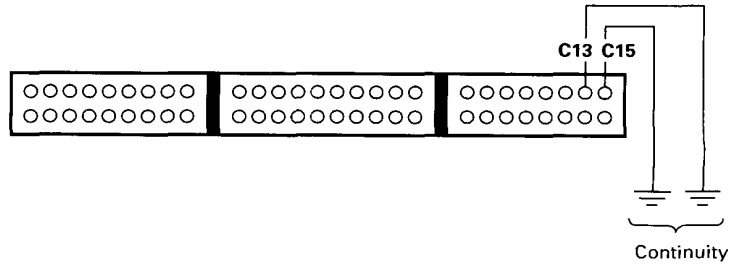
Turn the ignition switch ON.

Is the Check Engine light ON?

NO → **Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.**

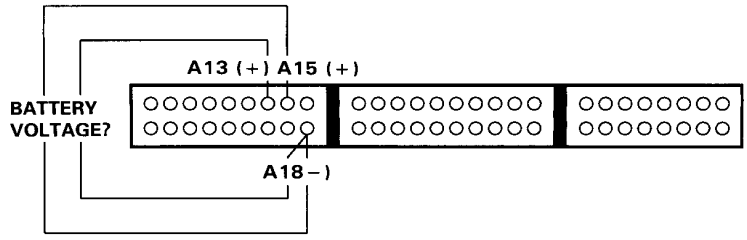
YES

Repair short to body ground in GRN/ORN wire between the ECU (B6) and Check Engine light.



(From page 11-16)

Measure voltage between A18 (–) and the following: A13 (+) and A15 (+).



Is there battery voltage?

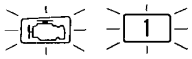
NO

- **Repair open in YEL/BLK wire between ECU (A13, A15) and main relay.**
- **Check main relay and wiring connectors at main relay.**

YES

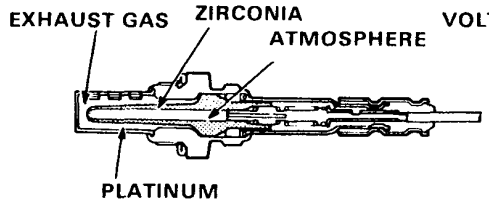
Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

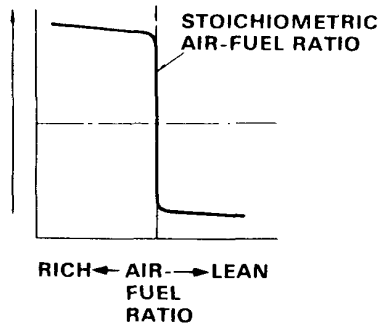
Troubleshooting Flowchart — Oxygen Sensor [D16A7, D16A8, D15B7 (KQ model) engine]

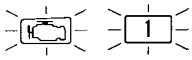


Self-diagnosis Check Engine light indicates code 1: A problem in the Oxygen (O_2) Sensor circuit.

The Oxygen sensor detects the oxygen content in the exhaust gas, and inputs the ECU. In operation, the ECU receives the signals from the sensor and varies the duration during which fuel is injected. The oxygen sensor is installed on the exhaust manifold.







— Check Engine light has been reported on.
— With the SCS short connector connected (page 11-9), CODE 1 is indicated.

Do the ECU Reset Procedure (page 11-10).

Inspect fuel pressure.

Is it normal? — NO → **Go to Fuel Supply System.**

YES

Warm up engine to normal operating temperature (cooling fan comes on).

Connect the SCS short connector to the service check connector (see page 11-9).

Starting at 1600 min^{-1} (rpm), accelerate using wide open throttle for at least 5 seconds. Then decelerate for at least 5 seconds with the throttle completely closed.

Is Check Engine warning light on and does LED indicate CODE 1. — NO → **Intermittent failure, system is OK at this time. Check for poor connections or loose wires at O_2 sensor and ECU.**

YES

(To page 11-19)

(From page 11-18)

Disconnect engine wire harness from the O_2 sensor.

Warm up engine to normal operating temperature again, then open the throttle wide open, then quickly release it.

Measure voltage between the connector terminal and body ground.

Is voltage above 0.6 V at wide open throttle and below 0.4 V when the throttle is quickly released?

NO → **Replace O_2 sensor.**

YES

Stop engine.

Reconnect the oxygen sensor.

Connect the test harness between the ECU and connector.

Restart and warm up engine to normal operating temperature, then open the throttle wide open, then quickly release it.

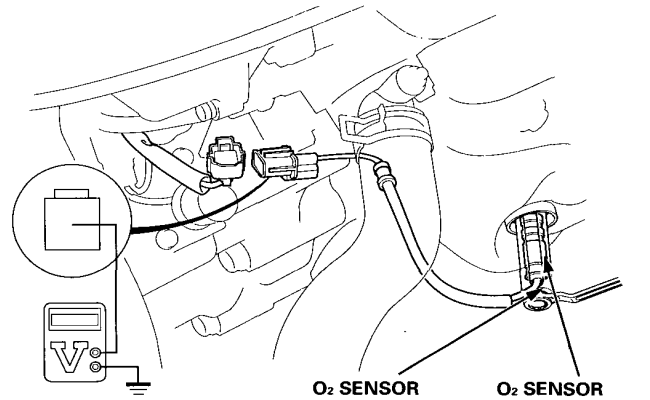
Measure voltage between D14 (+) terminal and D22 (–) terminal.

Is voltage above 0.6 V at wide open throttle and below 0.4 V when the throttle is quickly released?

NO → **Repair short or open in WHT wire between ECU (D14) and O_2 sensor.**

YES

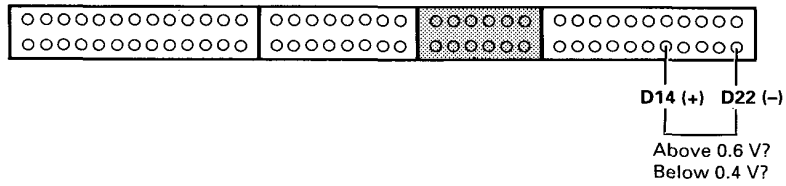
Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.



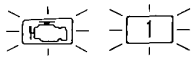
DIGITAL CIRCUIT TESTER
Commercially available or 07411 – 002000

O_2 SENSOR SOCKET WRENCH
07LAA – PT50101

O_2 SENSOR
45 N·m (4.5 kg-m, 33 lb-ft)

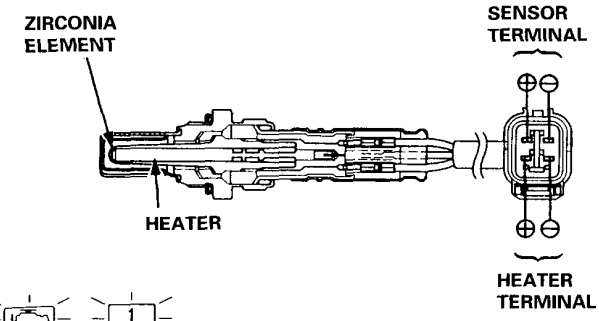


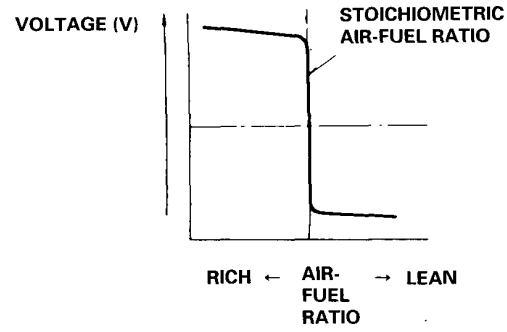
Troubleshooting Flowchart — Oxygen Sensor [D15B7(Except KQ model), D15Z1, D16Z6, D16Z7, D16Y1, D16Z9, B16A2 engine]

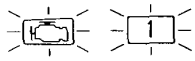


Self-diagnosis Check Engine light indicates code 1: A problem in the Oxygen (O_2) Sensor circuit.

The Oxygen sensor detects the oxygen content in the exhaust gas and signals the ECU. In operation, the ECU receives the signals from the sensor and varies the duration during which fuel is injected. The oxygen sensor has an internal heater. The heater stabilizes the sensor's output. The oxygen sensor is installed in the exhaust manifold.







— Check Engine light has been reported on.
— With the SCS short connector connected (page 11-9), CODE 1 is indicated.

↓

Do the ECU Reset Procedure (page 11-10).

↓

Warm up engine to normal operating temperature (cooling fan comes on).

↓

Run engine for 60 seconds.

↓

Connect the SCS short connector to the service check connector (see page 11-9).

↓

Road test with the transmission in 2nd gear (M/T: 4th gear). Starting at 1600 min^{-1} (rpm), accelerate using wide open throttle for at least 5 seconds. Then decelerate for at least 5 seconds with the throttle completely closed.

↓

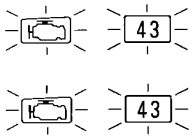
Is Check Engine light on and does it indicate CODE 1?

NO → **Intermittent failure, system is OK at this time. Check for poor connections or loose wires at O_2 sensor and ECU.**

YES ↓

Go to page and perform test for CODE 43 (page 11-21).

Troubleshooting Flowchart — Fuel Supply System [D15B7, D15Z1, D16Z6, D16Z7, D16Y1, D16Z9, B16A2 engine]



Self-diagnosis Check Engine light indicates code 43: Most likely a problem in the Oxygen (O_2) Sensor circuit or a problem in the Fuel Supply System.

— Check Engine light has been reported on.
— With the SCS short connector connected (page 11-9), CODE 43 is indicated.

Is the 43 code accompanied by the Check Engine light and poor driveability?

YES → **Go to Fuel Supply System.**

NO

Do the ECU Reset Procedure (page 11-10).

Warm up engine to normal operating temperature (cooling fan comes on).

Connect the SCS short connector to the service check connector (see page 11-9).

Hold engine at 3,000 min^{-1} (rpm) for two minutes.
(A/T: Transmission in [N] or [P].)

Is the Check Engine light on and does it indicate CODE 43?

NO → **Intermittent failure, system is OK at this time (test drive may be necessary).**
Check for poor connections or loose wires at O_2 sensor and ECU.

YES

Turn the ignition switch OFF.

Connect the test harness between the ECU and connector.

With the ignition switch OFF, wait for at least two minutes.

Install a jumper wire on the test harness between A6 and A26.

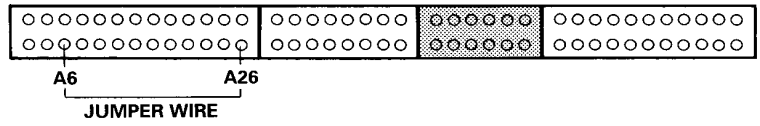
Turn the ignition switch ON.

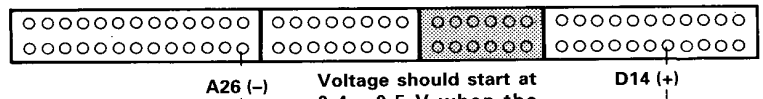
Measure voltage between D14 (+) terminal and A26 (–) terminal as soon as the ignition switch is turned on.

(To page 11-22)

From code 1 troubleshooting (page 11-20).

NOTE:
- Use DIGITAL CIRCUIT TESTER Commercially available or 07411 – 002000
- Use 2 Volt range.

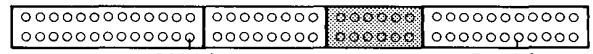



A26 (–)
Voltage should start at 0.4 – 0.5 V when the ignition switch is first turned on, and decrease to below 0.1 V in less than two minutes.
D14 (+)

(cont'd)

Troubleshooting Flowchart — Fuel Supply System [D15B7, D15Z1, D16Z6, D16Z7, D16Y1, D16Z9, B16A2 engine] (cont'd)

(From page 11-21)



Voltage should start at 0.4 – 0.5 V when the ignition switch is first turned on, and decrease to below 0.1 V in less than two minutes.

Is there 0.1 V or less when the ignition switch is first turned on?

YES → Disconnect the 4P connector from the O_2 sensor.

NO

Measure voltage between D14 (+) terminal and A26 (–) terminal.

Is there more than 0.1 V?

YES → **Replace O_2 sensor.**

NO

Turn the ignition switch OFF.

Disconnect the "D" connector from the main wire harness.

Turn the ignition switch ON.

Measure voltage between D14 (+) terminal and A26 (–) terminal.

Is there more than 0.1 V?

YES → **Repair short in WHT wire between ECU (D14) and O_2 sensor.**

NO

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

Disconnect the 4P connector from the O_2 sensor.

Measure voltage at the engine wire harness side of the O_2 sensor connector between GRN/WHT (–) and WHT (+).

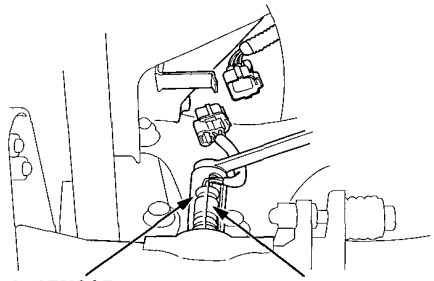
Is there more than 0.1 V?

YES → **Replace O_2 sensor.**

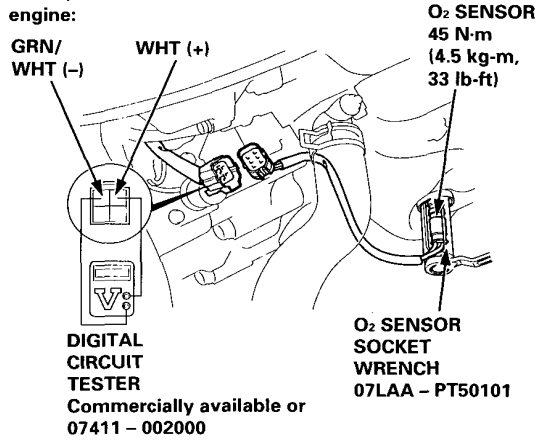
NO

Repair open in WHT wire between ECU (D14) and O_2 sensor. If wire is OK, check for open in GRN/WHT wire between ECU (D22) and O_2 sensor.

B16A2 engine:



D15B7, D15Z1, D16Z6, D16Z7, D16Z9, D16Y1 engine:

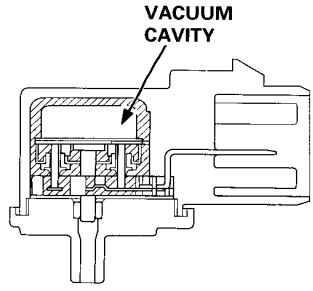

GRN/WHT (–)
WHT (+)
O2 SENSOR 45 N·m (4.5 kg-m, 33 lb-ft)
DIGITAL CIRCUIT TESTER Commercially available or 07411 – 002000
O2 SENSOR SOCKET WRENCH 07LAA – PT50101

Troubleshooting Flowchart — MAP Sensor [Except D15B2 engine]

Self-diagnosis Check Engine light indicates code 3: An electrical problem in the Manifold Absolute Pressure (MAP) Sensor system.

Self-diagnosis Check Engine light indicates code 5: A mechanical problem in the Manifold Absolute Pressure (MAP) Sensor system.

The MAP sensor converts manifold absolute pressure into electrical signals and inputs the ECU.



— Check Engine light has been reported on.
— With the SCS short connector connected (page 11-9), CODE 3 is indicated.

Do the ECU Reset Procedure (page 11-10).

Start the engine and allow it to idle.

Is Check Engine light on and does it indicate CODE 3?

NO → **Intermittent failure, system is OK at this time (test drive may be necessary).**
Check for poor connection or loose wires at MAP sensor and ECU.

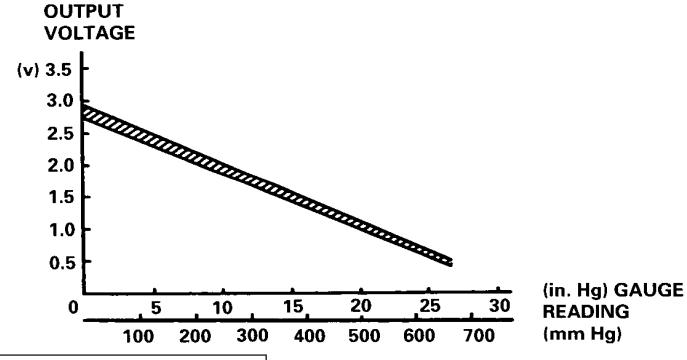
YES

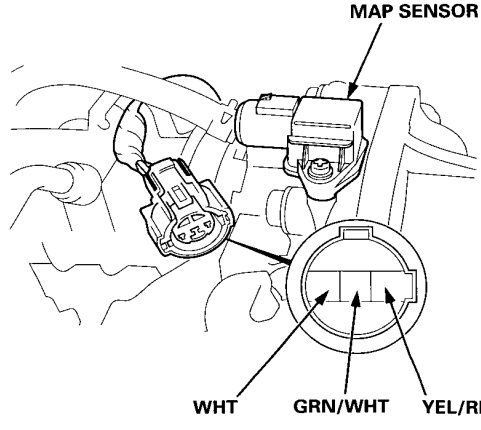
Turn the ignition switch OFF.

Disconnect the 3P connector from the MAP sensor.

Turn the ignition switch ON.

(To page 11-24)





(cont'd)

Troubleshooting Flowchart — MAP Sensor [Except D15B2 engine] (cont'd)

(From page 11-23)

Measure voltage between YEL/RED (+) terminal and body ground.

Is there approx. 5 V?

YES → Measure voltage between YEL/RED (+) terminal and GRN/WHT (–) terminal.

NO → Connect the test harness "D" connector to the ECU only, not to the main wire harness.

Measure voltage between D19 (+) terminal and D21 (–) terminal.

Is there approx. 5 V?

YES → Measure voltage between WHT (+) terminal and GRN/WHT (–) terminal.

NO → **Repair open in YEL/RED or YEL/GRN wire between ECU (D19) and MAP sensor.**

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

Is there approx. 5 V?

NO → **Repair open in GRN/WHT or GRN/BLU wire between ECU (D21) and MAP sensor.**

YES → Turn the ignition switch OFF.

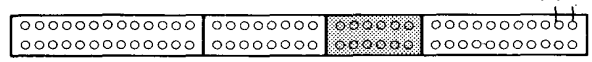
Reconnect the 3P connector to the MAP sensor.

Connect the test harness between the ECU and connector.

Turn the ignition switch ON.

5 V?

D19 (+) D21 (–)



Is there approx. 5 V?

NO → (To page 11-25)

YES → (To page 11-25)

(From page 11-24)

Turn the ignition switch OFF.

Connect the test harness "D" connector to the ECU only, not to the main wire harness.

Turn the ignition switch ON.

Measure voltage between D17 (+) terminal and D21 (–) terminal.

Is there approx. 5 V?

YES

— **Repair short in WHT or PNK/WHT wire between ECU (D17), and MAP sensor.**
— **Repair open in WHT or PNK/WHT wire between ECU (D17) and MAP sensor.**

NO

Substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.

(From page 11-24)

Measure voltage between D17 (+) terminal and D21 (–) terminal.

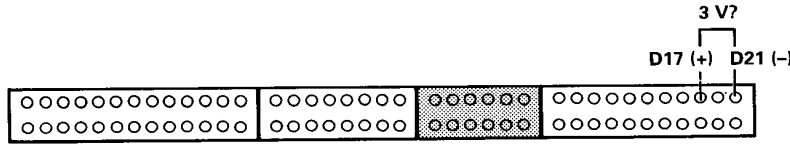
Is there approx. 3 V?

NO

Replace MAP sensor.

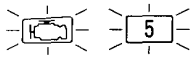
YES

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.



(cont'd)

Troubleshooting Flowchart — MAP Sensor (cont'd)



— Check Engine light has been reported on.
— With the SCS short connector connected (page 11-9), CODE 5 is indicated.

Do the ECU Reset Procedure (page 11-10).

Start the engine and keep engine rpm at 2,000 for one minute.

Is Check Engine light on and does it indicate CODE 5?

NO

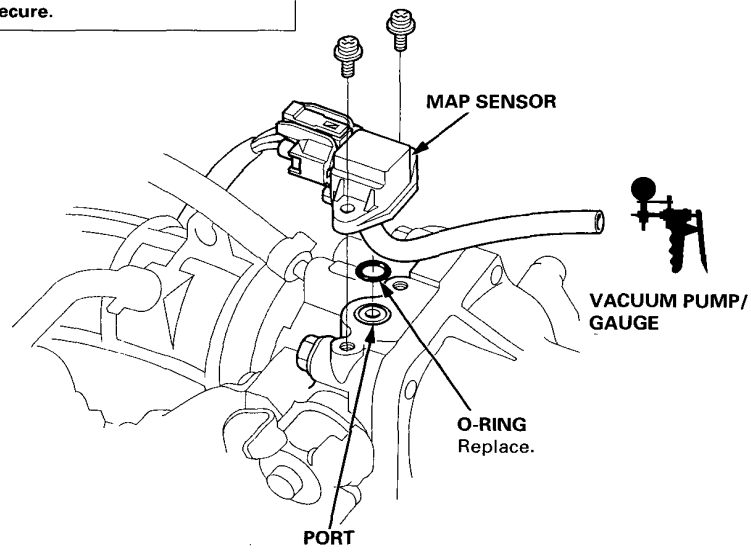
— Intermittent failure, system is OK at this time (test drive may be necessary).
— Make sure all connectors are secure.

YES

Turn the ignition switch OFF.

Remove the MAP sensor from throttle body.

Connect a vacuum pump to the MAP sensor and apply vacuum.



Does it hold vacuum?

NO

Replace MAP sensor.

YES

Start the engine.

Put your finger over the MAP port on throttle body.

(To page 11-27)

(From page 11-26)

Is there manifold vacuum?

NO → **Remove restriction from throttle body.**

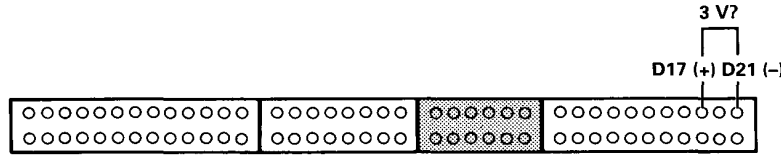
YES

Stop the engine.

Connect the test harness between the ECU and connector.

Turn the ignition switch ON.

Measure voltage between D17 (+) terminal and D21 (–) terminal.



Is there approx. 3 V?

NO → **Replace MAP sensor.**

YES

Install the MAP sensor.

Start the engine and allow it to idle.

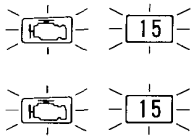
Is there approx. 1 V?

NO → **Replace MAP sensor.**

YES

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

Troubleshooting Flowchart — Ignition Output Signal



Self-diagnosis Check Engine light indicates code 15: A problem in the Ignition Output Signal circuit.

— Check Engine light has been reported on.
— With the SCS short connector connected (see page 11-9), CODE 15 is indicated.

Do the ECU Reset Procedure (page 11-10).

Start the engine.

NOTE: If the engine won't start, it may take 20 seconds of cranking to set the code.

Is Check Engine light on and does it indicate CODE 15?

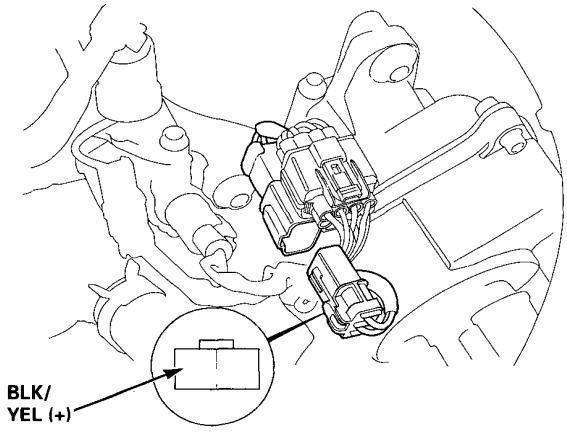
NO

Intermittent failure, system is OK at this time (test drive may be necessary).
Check for poor connections or loose wires at igniter unit and ECU.

YES

Turn the ignition switch OFF.

Disconnect the 2P connector from the distributor



Turn the ignition switch ON.

Measure voltage between BLK/YEL (+) terminal and body ground.

Is there battery voltage?

NO

Repair open in BLK/YEL wire between the 2P connector and ignition switch.

YES

(To page 11-29)

(From page 11-28)

Turn the ignition switch OFF.

Reconnect the 2P connector.

Connect the test harness between the ECU and connectors.

Turn the ignition switch ON.

Measure voltage between A21 (+) terminal and A26 (–) terminal.

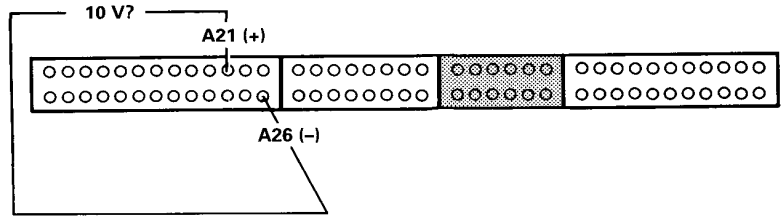
Is there approx. 10 V?

NO

- **Replace the igniter unit.**
- **Repair open or short in YEL/GRN wire between igniter unit and ECU (A21).**

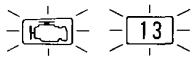
YES

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.



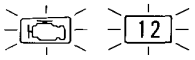
NOTE: If the YEL/GRN wire was shorted, the igniter may be damaged.

Troubleshooting Flowchart — PA Sensor [D15B7 engine, D15Z1/D16Z6 engine (KS model)]



Self-diagnosis Check Engine light indicates code 13: A problem in the Atmospheric Pressure (PA) Sensor.

The PA sensor is built into the ECU.



— Check Engine light has been reported on.
— With the SCS short connector connected (page 11-9). CODE 13 is indicated.

↓

Do the ECU Reset Procedures (page 11-10).

↓

Turn the ignition switch ON.

↓

Is Check Engine light on and does it indicate CODE 13?

NO → **Intermittent failure, system is OK at this time (test drive may be necessary).**

YES ↓

Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

Idle Speed Setting [Except D15B2 engine]

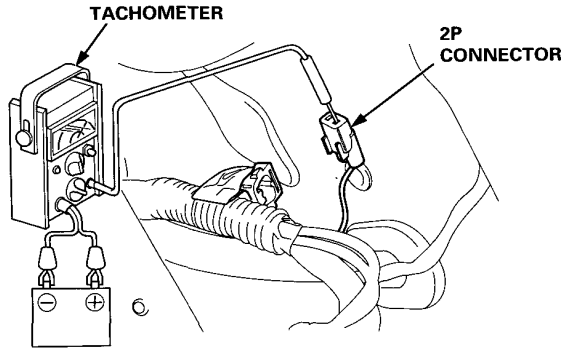
Inspection/Adjustment

NOTE:
- Before the idle speed setting, check the following items:
  - — The Check Engine light has not been reported on
  - — Ignition timing
  - — Spark plugs
  - — Air cleaner
  - — PCV system

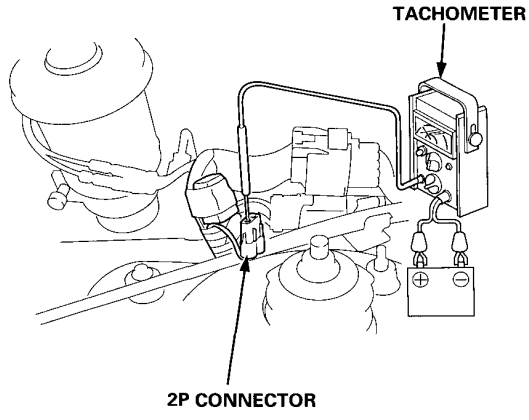
1. Connect a tachometer.

2. Start the engine. Hold the engine at 3,000 rpm with no load (A/T in [N] or [P] position, M/T in neutral) until the radiator fan comes on, then let it idle.

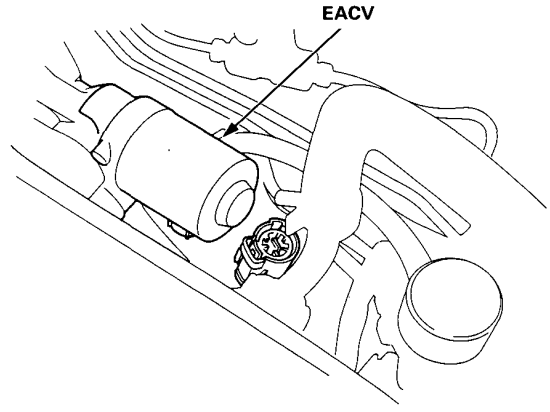
LHD:



RHD:



3. Disconnect the 2P connector from the EACV.



4. Start the engine with the accelerator pedal slightly depressed. Stabilize the engine speed at 1000, then slowly release the pedal until the engine idles.

5. Check idling in no-load conditions: headlights, blower fan, rear defogger, cooling fan, and air conditioner are not operating.

   NOTE: (KS) Remove No. 16 (7.5 A) fuse in the under-dash fuse box, then check that the headlights and side marker lights are off.

Idle speed should be:

Manual	420 ± 50 min^{-1} (rpm)
Automatic	420 ± 50 min^{-1} (rpm) (in [N] or [P])

Adjust the idle speed, if necessary, by turning the idle adjusting screw.

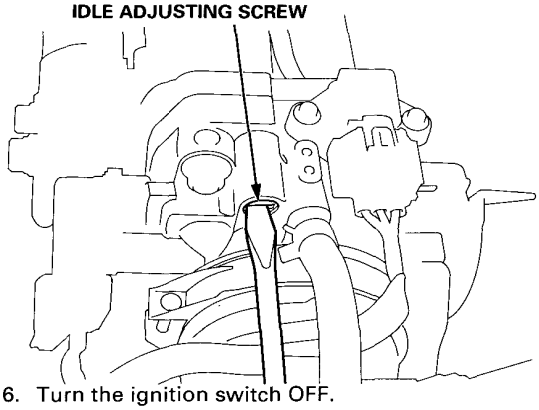
NOTE: After adjust the idle speed in this step, re-check the ignition timing.
If it is out of spec, go back to step 4.

(cont'd)

Idle Control System

Idle Speed Setting [Except D15B2 engine] (cont'd)

IDLE ADJUSTING SCREW



6. Turn the ignition switch OFF.
7. Reconnect the 2P connector on the EACV, then remove BACK UP fuse in the under-hood fuse/relay box for 10 seconds to reset the ECU.
8. Restart and idle the engine with no-load conditions for one minute, then check the idle speed.

   NOTE: (KS) Remove No. 16 (7.5 A) fuse in the under-dash fuse box, then check that the headlights and side marker lights are off.

Idle speed should be:

Manual	D15Z1 engine: 600 ± 50 min^{-1} (rpm) Others: 750 ± 50 min^{-1} (rpm)
Automatic	750 ± 50 min^{-1} (rpm) (in N or P)

9. Idle the engine for one minute with headlights (Low) ON and check the idle speed.

Idle speed should be:

Manual	D15Z1 engine: 700 ± 50 min^{-1} (rpm) Others: 750 ± 50 min^{-1} (rpm)
Automatic	750 ± 50 min^{-1} (rpm) (in N or P)

10. Turn the headlights off. Idle the engine for one minute with heater fan switch at HI and air conditioner on, then check the idle speed.

Idle speed should be:

Manual	D15Z1 engine: 810 ± 50 min^{-1} (rpm) Others: 810 ± 50 min^{-1} (rpm)
Automatic	810 ± 50 min^{-1} (rpm) (in N or P)

NOTE: If the idle speed is not within specification, see Idle Control System Troubleshooting Guide.

Fuel Supply System

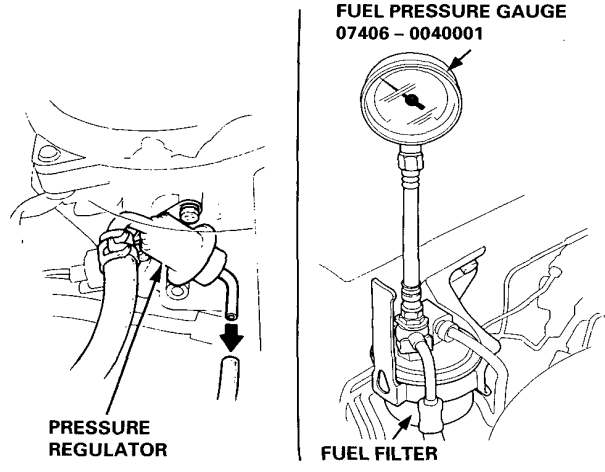
Fuel Pressure [D15B2 *engine*]

Inspection

1. Relieve fuel pressure.
2. Remove the service bolt on the fuel filter while holding the banjo bolt with another wrench. Attach the special tool.
3. Start the engine*. Measure the fuel pressure with the engine idling and vacuum hose of the pressure regulator disconnected from the pressure regulator.

   Pressure should be:
   275 – 324 kPa (2.8 – 3.3 kg/cm^2, 40 – 47 psi)
4. Reconnect vacuum hose to the pressure regulator.

   Pressure should be:
   211 – 260 kPa (2.15 – 2.65 kg/cm^2, 31 – 38 psi)



*: If the engine will not start, turn the ignition switch on, wait for two seconds, turn it off, then back on again and read the fuel pressure.

- If the fuel pressure is not as specified, first check the fuel pump. If the pump is OK, check the following:

— If the pressure is higher than specified, inspect for:
  - Pinched or clogged fuel return hose or piping.
  - Faulty pressure regulator.

— If the pressure is lower than specified, inspect for:
  - Clogged fuel filter.
  - Faulty pressure regulator.
  - Leakage in the fule line.

Main Relay [Except D15B2 engine]

Troubleshooting Flowchart

— Engine will not start.
— Inspection of main relay and relay harness.

Disconnect the main relay connectors.

Check for continuity between BLK terminal ② and body ground.

Does continuity exist?
NO → **Repair open in BLK wire between main relay and G101.**
YES

Measure the voltage between YEL/WHT terminal ① and body ground.

Is there battery voltage?
NO → **— Replace ECU (15 A) fuse.**
— Repair open or short in the YEL/WHT wire between the main relay and the ECU (15 A) fuse.
YES

Turn the ignition switch ON.

Measure the voltage between BLK/YEL terminal ⑤ and body ground.

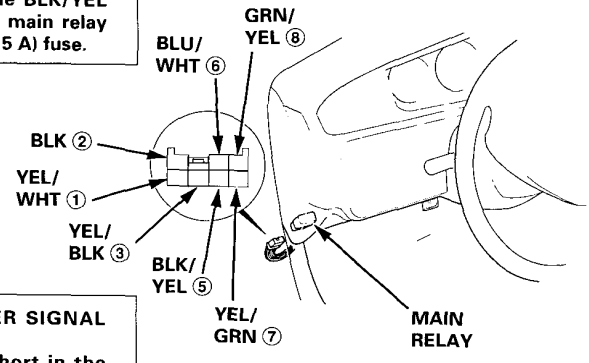
Is there battery voltage?
NO → **— Replace ACG (S) (15 A) fuse.**
— Repair open in the BLK/YEL wire between the main relay and the ACG (S) (15 A) fuse.
YES

Turn the ignition switch to the START (III) position.

Measure the voltage between BLU/WHT terminal ⑥ and body ground.

Is there battery voltage?
NO → **— Replace STARTER SIGNAL (7.5 A) fuse.**
— Repair open or short in the BLU/WHT wire ⑥ between the main relay and the STARTER SIGNAL (7.5 A) fuse.
YES

(To page 11-34)



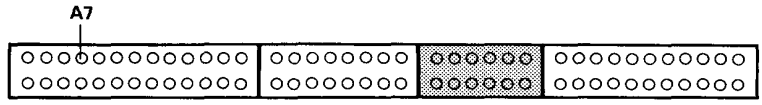
(cont'd)

Main Relay [Except D15B2 engine] (cont'd)

(From page 11-33)

Turn the ignition switch off.

Connect the test harness between the ECU and connector Disconnect "A" connector from the ECU only, not the main wire harness.



Check for continuity between GRN/YEL terminal ⑧ and A7 terminal.

Does continuity exist?

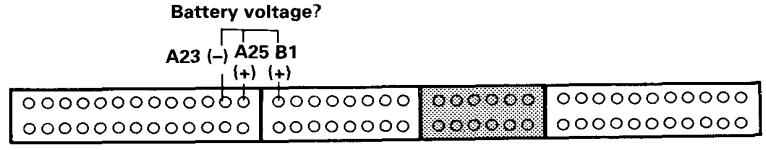
NO → **Repair open in GRN/YEL wire between ECU (A7) and main relay.**

YES

Reconnect "A" connector to the ECU.

Connect the main relay connector.

Turn the ignition switch ON.



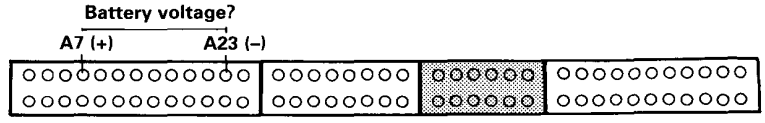
Measure the voltage between A23 (–) terminal and the following terminals: A25 (+) B1 (+).

Is there battery voltage?

NO → **— Repair open in the YEL/BLK wire ③ between the ECU (A25, B1) and main relay.**
— Replace main relay.

YES

Turn the ignition switch OFF.



Measure the voltage between A7 (+) terminal and A23 (–) terminal when the ignition switch is first turned ON for two seconds.

Is there 1.0 V or less?

NO → **Substitute a known-good ECM and recheck. If Prescribed voltage is now available, replace the original ECM.**

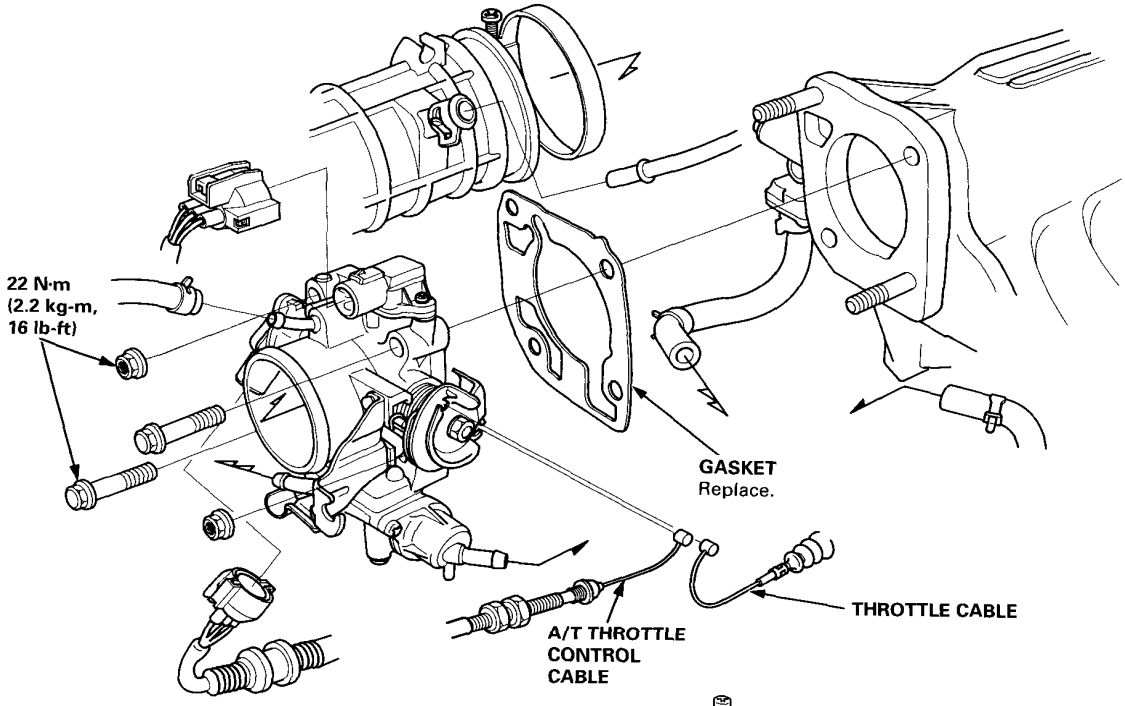
YES

Check the main relay.

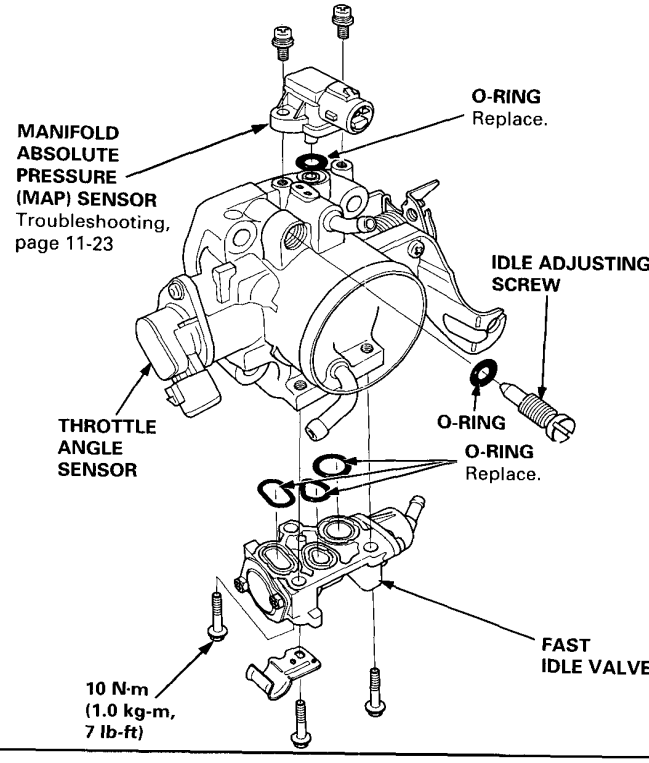
Throttle Body [Except D15B2 engine]

Disassembly (All models)

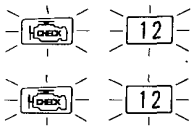
CAUTION:
- **The throttle stop screw is non-adjustable.**
- **After reassembly, adjust the throttle cable, and A/T throttle control cable for cars with A/T.**



B16A2 engine:



Troubleshooting Flowchart



Self diagnosis Check Engine light indicates code 12: A problem in the Exhaust Gas Recirculation (EGR) system.

— Check Engine light has been reported on.
— With the SCS short connector connected (page 11-9), CODE 12 is indicated.

Do the ECU Reset Procedure (page 11-10).

Connect the SCS short connector to the service check connector (see page 11-9).

Road test necessary: Warm up the engine to normal operating temperature (cooling fan comes on).
Drive the car on the road for approx. 10 minutes. With the transmission in low gear, keep the engine speed in the 1,700 – 2,500 range.

Is Check Engine light on and does it indicate CODE 12?

NO → **Intermittent failure, system is OK at this time.**
Check for poor connections or loose wires at EGR valve, control box and ECU.

YES

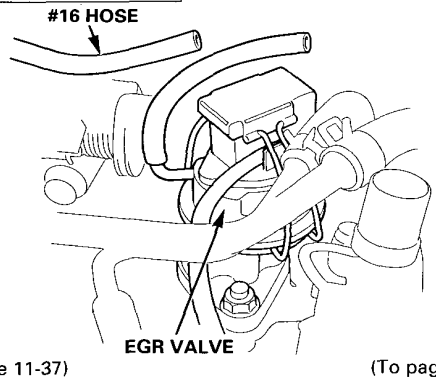
With the engine at idle, disconnect the #16 hose from the EGR valve and connect a vacuum pump/gauge to the hose.

Is there any vacuum?

YES → Disconnect 2P connector from the control box and check the #16 hose for vacuum again.

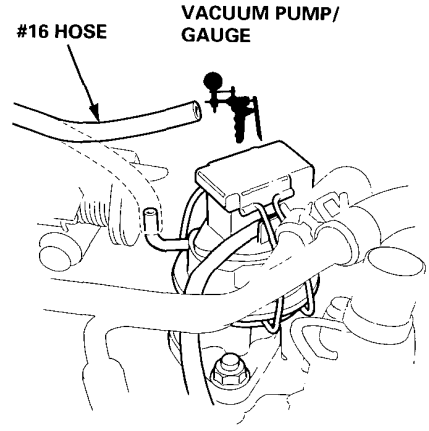
NO

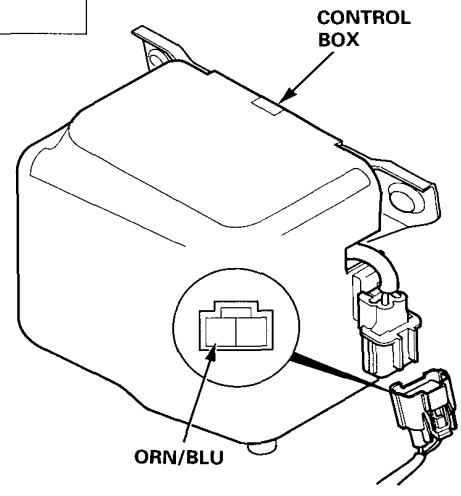
Move the vacuum pump/gauge to the EGR valve.



(To page 11-37)

(To page 11-37)





(From page 11-36)

With the engine at idle, apply 200 mmHg of vacuum to the EGR valve.

Does the engine stall or run rough and does the EGR valve hold vacuum?

NO → **Replace EGR valve.**

YES

Disconnect the 2P connector from the control box.

Measure voltage between BLK/YEL (+) terminal on the main wire harness and body ground.

Is there battery voltage?

NO → **Repair open in BLK/YEL wire between the solenoid valve and ACG (S) (15 A) fuse.**

YES

Reconnect the vacuum pump/gauge to the #16 hose.

Start the engine and allow it to idle.

(To page 11-38)

(From page 11-36)

Is there any vacuum?

YES → **Check vacuum hose routing of the entire EGR system. If hose routing is OK, replace EGR control solenoid valve.**

NO

Turn the ignition switch OFF and disconnect the "A" connector from the ECU.

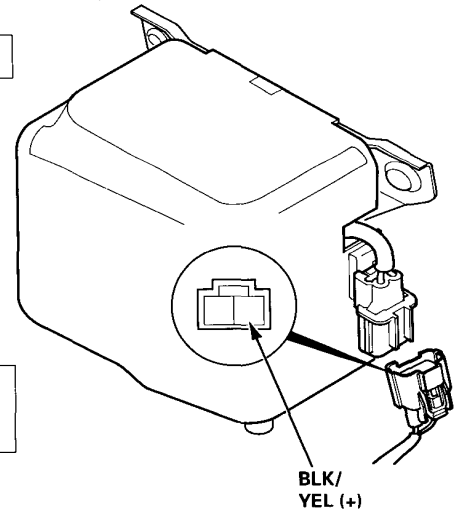
Check for continuity to ground on ORN/BLU wire of 2P connector.

Does continuity exist?

YES → **Repair short in ORN/BLU wire between EGR control solenoid valve and ECU (A11).**

NO

Substitute a known-good ECU and retest. If symptom/indication goes away, replace the original ECU.



(cont'd)

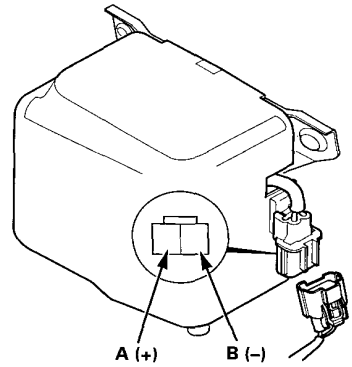
Exhaust Gas Recirculation System [D15Z1 engine] (cont'd)

(From page 11-37)

Connect the battery positive terminal to the A terminal of the 2P connector. While watching the vacuum gauge, connect the battery negative terminal to the B terminal.

Is there approx. 200 mmHg within 1 second?

NO → Turn the ignition switch OFF and inspect the #16 and #10 hoses for leaks, restrictions, or misrouting.



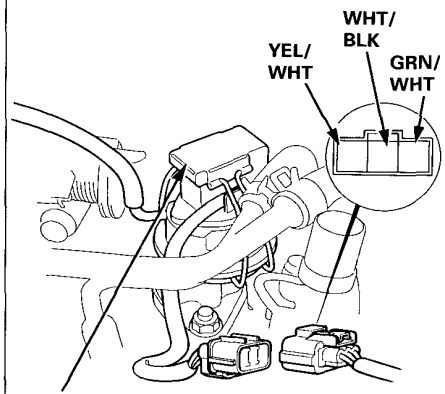
Are the hoses OK?

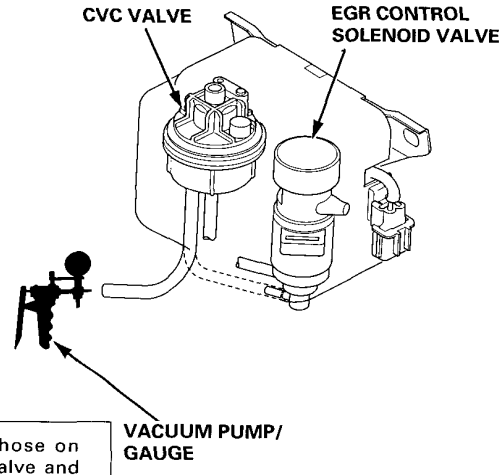
NO → **Correct as necessary.**

YES

YES

Turn the ignition switch OFF and reconnect the 2P connector to the EGR control solenoid valve.





Disconnect the lower hose on EGR control solenoid valve and connect a vacuum gauge to the hose.

Start the engine and allow it to idle.

Disconnect 3P connector from the EGR valve.

Turn the ignition switch ON.

Is there 150 – 250 mmHg of vacuum?

NO → **Replace CVC valve.**

YES

Measure voltage between YEL/WHT (+) terminal and GRN/WHT (–) terminal.

Replace the EGR control solenoid valve.

Is there approx. 5 V?

NO → Measure voltage between YEL/WHT (+) terminal and body ground.

YES

(To page 11-39)

(To page 11-39)

(From page 11-38)

Turn the ignition switch OFF.

Reconnect the 3P connector to the EGR valve.

Connect the test harness between the ECU and connectors.

Turn the ignition switch ON.

Measure voltage between D12 (+) terminal and D22 (–) terminal.

Is the voltage approx. 1.2 V with no vacuum applied and approx. 4.3 V with 200 mmHg of vacuum applied (to the EGR valve)?

NO

- **Repair open or short in WHT/BLK wire between EGR valve and ECU (D12).**
- **If wire is OK, replace the EGR valve.**

YES

(To page 11-40)

(From page 11-38)

Is there approx. 5 V?

YES

Repair open in GRN/WHT wire between EGR valve and ECU (D22).

NO

Turn the ignition switch OFF.

Connect the test harness "D" connector to the ECU only, not to the main wire harness.

Turn the ignition switch ON.

Measure voltage between D20 (+) terminal and D22 (–) terminal.

Is there approx. 5 V?

YES

Repair open in YEL/WHT wire between EGR valve and ECU (D20).

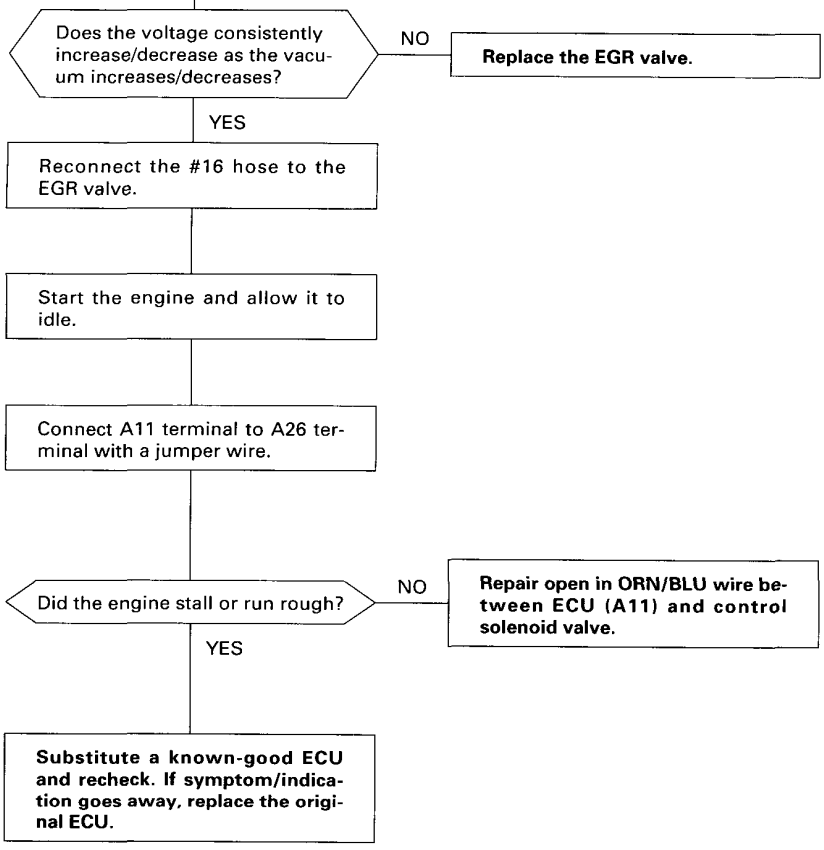
NO

Substitute a known-good ECU and recheck. If prescribed voltage is now available, replace the original ECU.

(cont'd)

Exhaust Gas Recirculation System [D15Z1 engine] (cont'd)

(From page 11-39)


Does the voltage consistently increase/decrease as the vacuum increases/decreases?
NO
Replace the EGR valve.
YES
Reconnect the #16 hose to the EGR valve.
Start the engine and allow it to idle.
Connect A11 terminal to A26 terminal with a jumper wire.
Did the engine stall or run rough?
NO
Repair open in ORN/BLU wire between ECU (A11) and control solenoid valve.
YES
Substitute a known-good ECU and recheck. If symptom/indication goes away, replace the original ECU.

Manual Transmission

2WD Manual Transmission

S20 13-1

Y21 13-11

4WD Manual Transmission

S22 13-21

2WD Manual Transmission S20

Transmission Assembly

Removal 13-2
Installation 13-6

Outline of Model Changes

- The transmission mount, right front mount/bracket, and rear mount bracket have been modified.
- Torque value of transmission mounting bolts have been changed.
- Torque value of transmission mount bolt has been changed.
- Installed of transmission breather cap has been changed.

Transmission Assembly

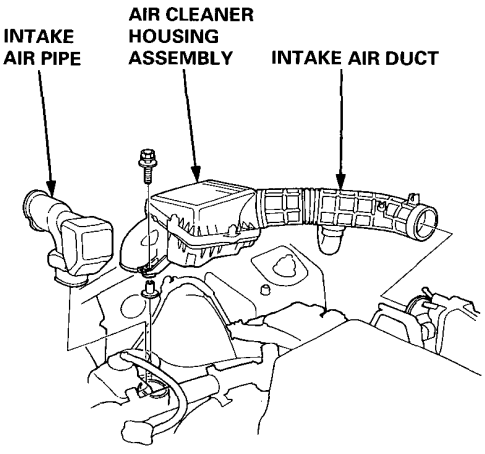
Removal

⚠ WARNING

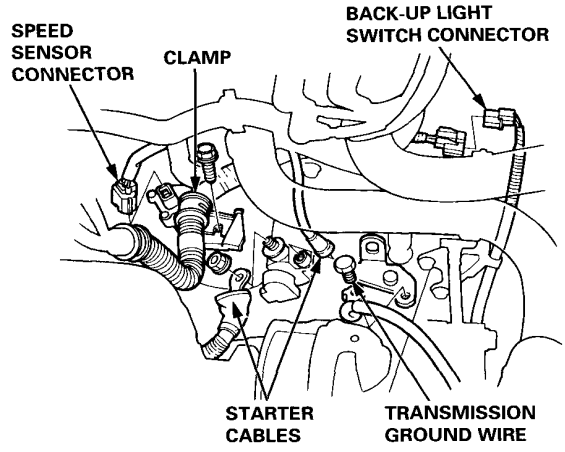
- **Make sure jacks and safety stands are placed properly (see section 1).**
- **Apply parking brake and block rear wheels so car will not roll off stands and fall on you while working under it.**

CAUTION: Use fender covers to avoid damaging painted surfaces.

1. Disconnect the negative (–) cable first, then the positive (+) cable from the battery.
2. Remove the intake air pipe, intake air duct and air cleaner housing assembly.
3. Drain transmission oil.

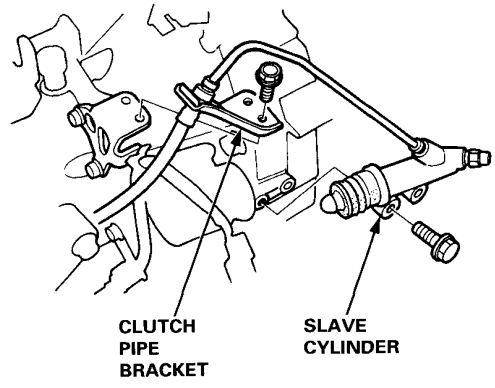


4. Disconnect the starter motor cables and transmission ground wire.
5. Remove the engine wire harness clamp.
6. Disconnect the back-up light switch connector and speed sensor connector.

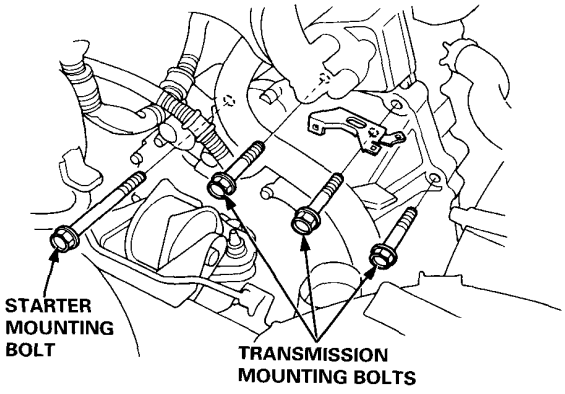


7. Remove the clutch pipe bracket and slave cylinder.

   NOTE: Do not operate the clutch pedal once the slave cylinder has been removed.

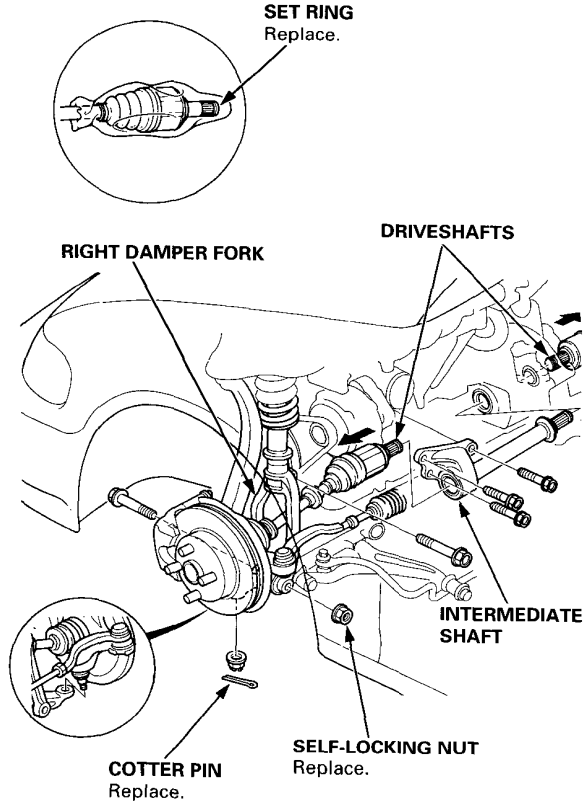


8. Remove the three transmission mounting bolts and lower starter mounting bolt.

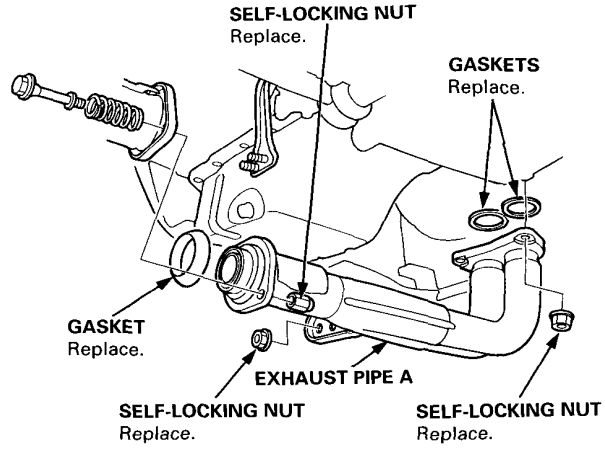


9. Remove the driveshafts, intermediate shaft, and right damper fork (see section 16).

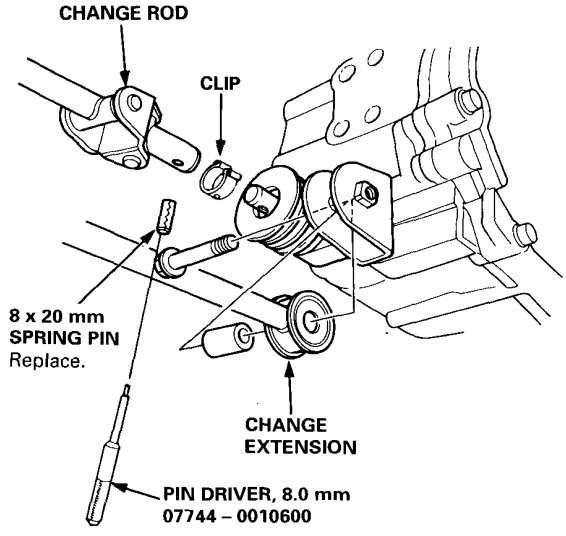
NOTE: Coat all precision finished surfaces with clean engine oil or grease. Tie plastic bags over the driveshaft ends.



10. Remove exhaust pipe A.



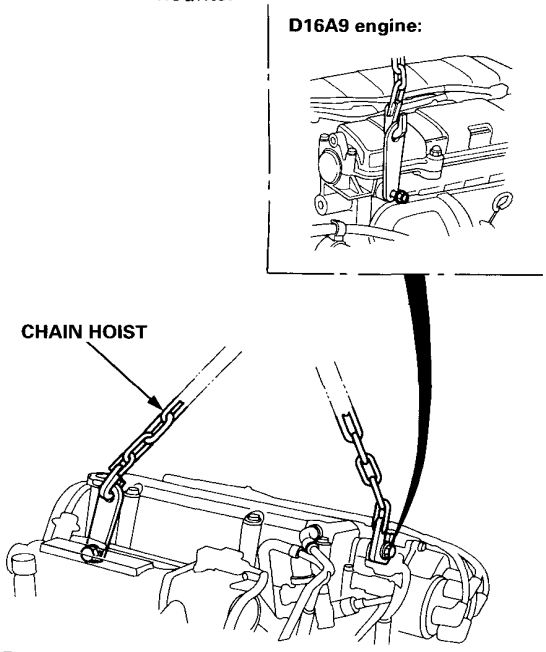
11. Remove the change rod and change extension.



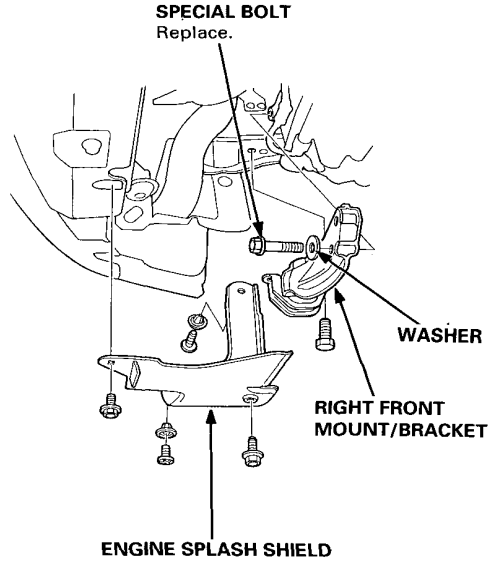
(cont'd)

Removal (cont'd)

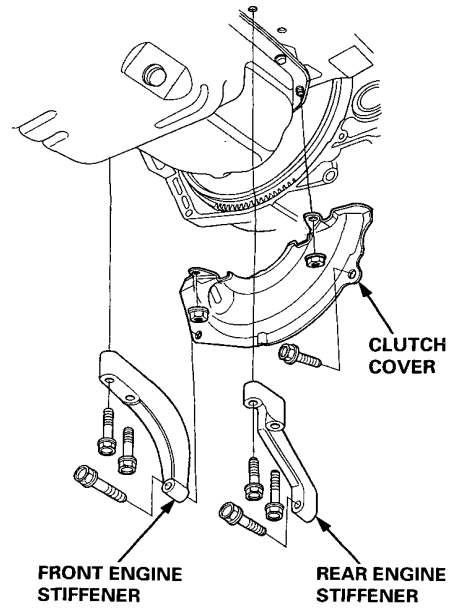
12. Install the bolts in the cylinder head and attach a chain hoist to the bolts, then lift the engine slightly to unload the mounts.



13. Remove the engine splash shield and right front mount/bracket.

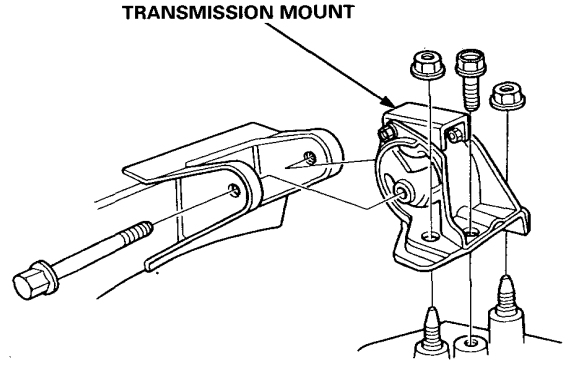


14. Remove the front and rear engine stiffeners, and the clutch cover.

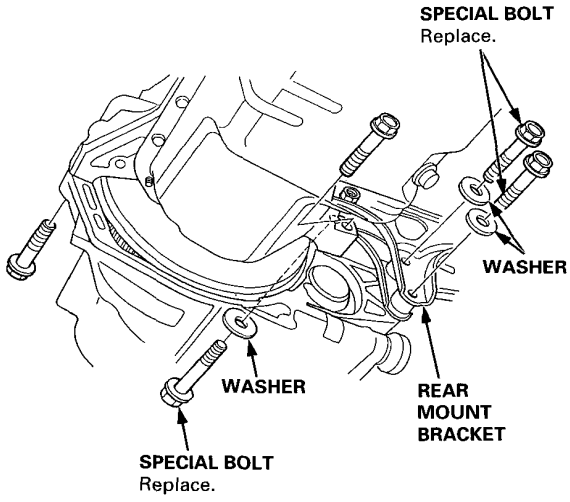


15. Place a transmission jack under transmission and a jack stand under the engine.

16. Remove the transmission mount.



17. Remove the rear mount bracket bolts and transmission mounting bolts.

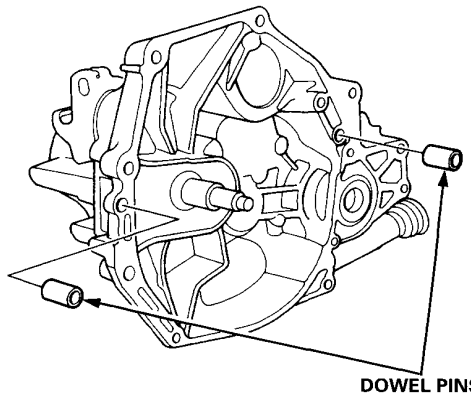


18. Pull the transmission away from the engine until it clears the mainshaft, then lower it on the transmission jack.

Transmission Assembly

Installation

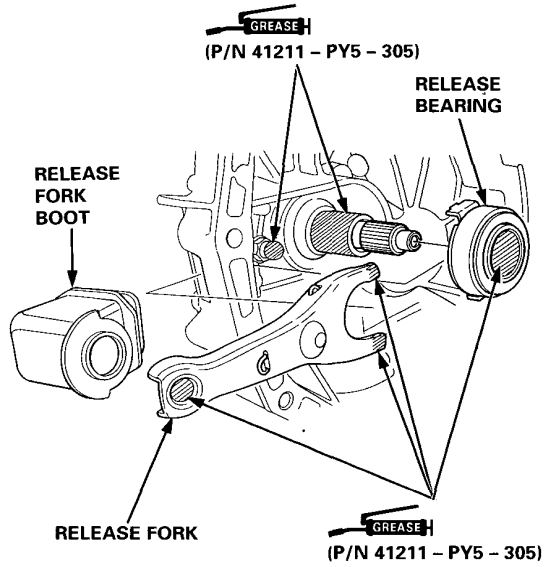
1. Install the dowel pins.



2. Apply grease to the parts as shown.

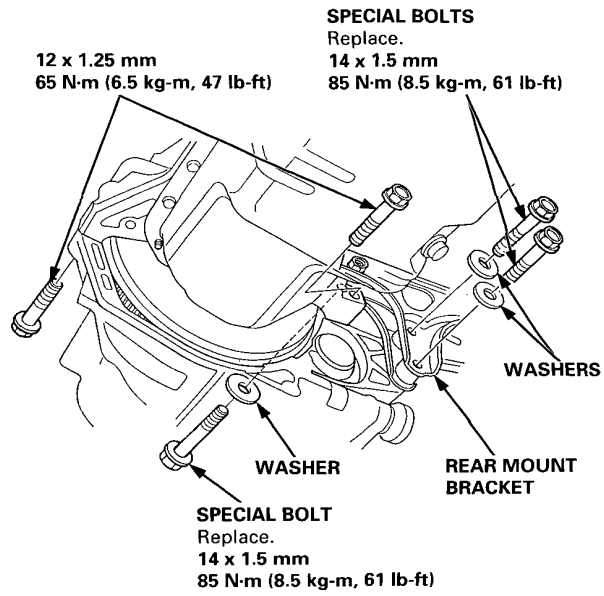
   NOTE: Use only HONDA Genuine Urea Grease UM264 (P/N 41211 – PY5 – 305).

3. Install the release bearing, release fork, and release fork boot.



4. Place the transmission on the transmission jack, and raise it to the engine level.

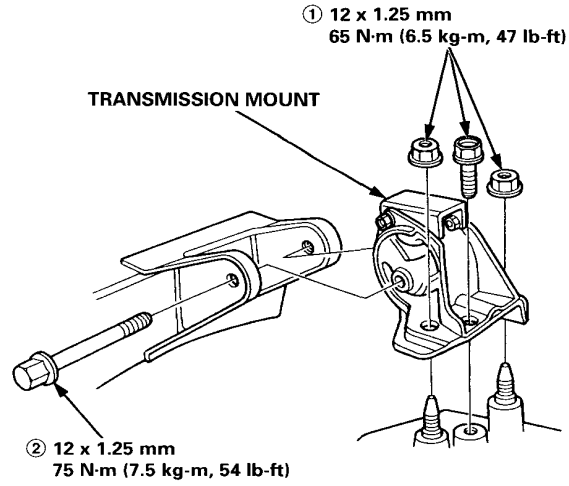
5. Install the transmission mounting bolts and rear mount bracket bolts.



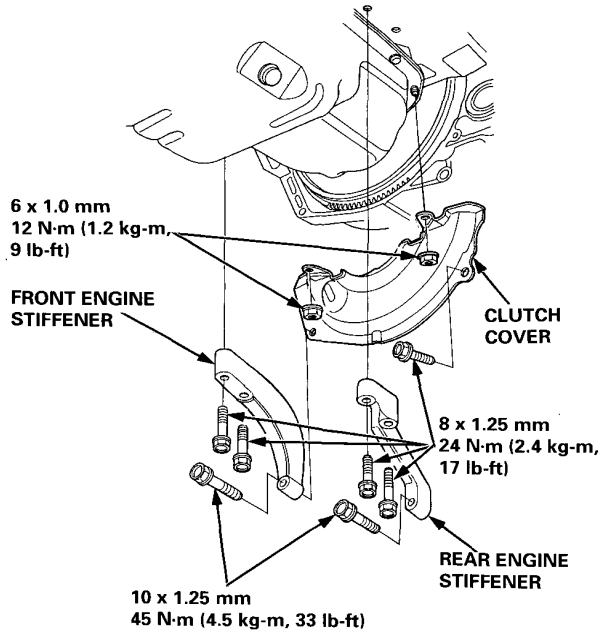
6. Raise the transmission, then install the transmission mount.

   NOTE: Torque the mounting bolt and nuts in the sequence shown.

   CAUTION: Check that the bushings are not twisted or offset.

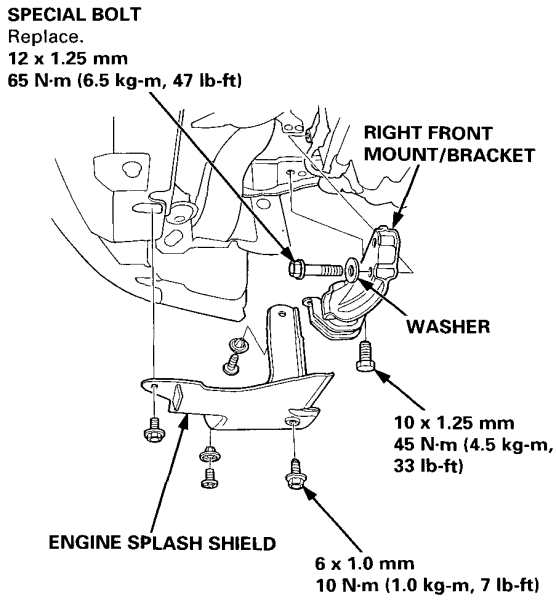


7. Install the clutch cover, then install the front and rear engine stiffeners.

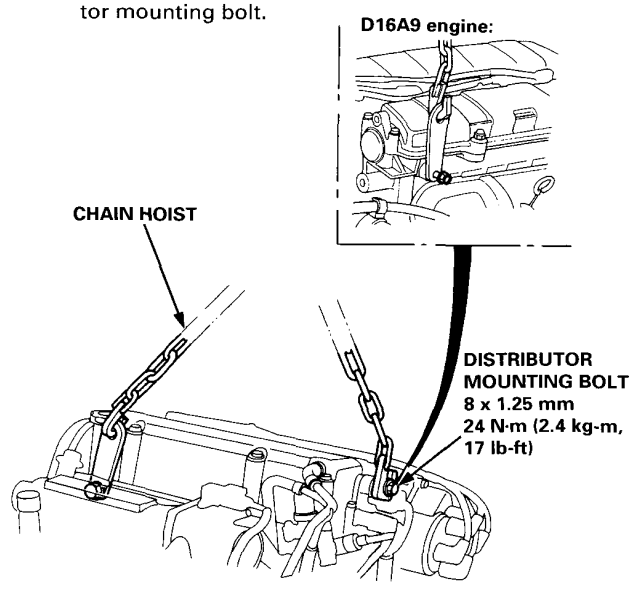

6 x 1.0 mm
12 N·m (1.2 kg-m, 9 lb-ft)
FRONT ENGINE STIFFENER
CLUTCH COVER
8 x 1.25 mm
24 N·m (2.4 kg-m, 17 lb-ft)
REAR ENGINE STIFFENER
10 x 1.25 mm
45 N·m (4.5 kg-m, 33 lb-ft)

8. Install the right front mount/bracket.

9. Install the engine splash shield.



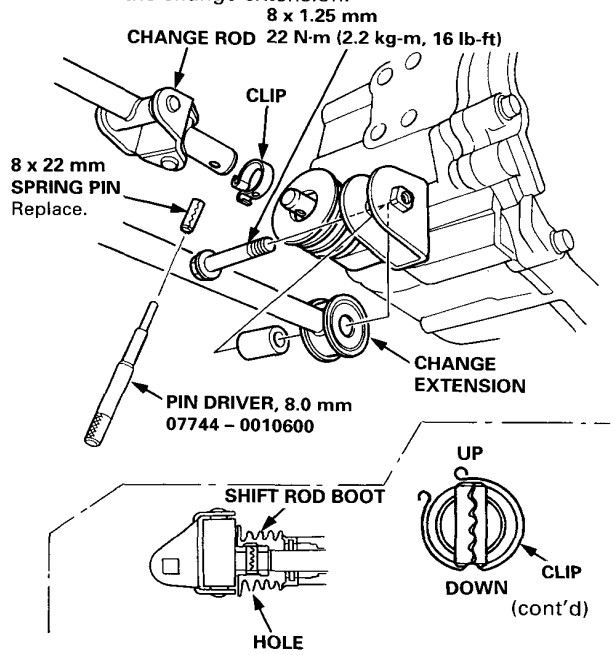
10. Remove the chain hoist, then reinstall the distributor mounting bolt.



11. Install the change rod, the spring pin, and the clip.

NOTE:
- Install the clip and the spring pin on the change joint as shown.
- Turn the shift rod boot so the hole is facing down as shown.
- Make sure the shift rod boot is installed on the change rod.

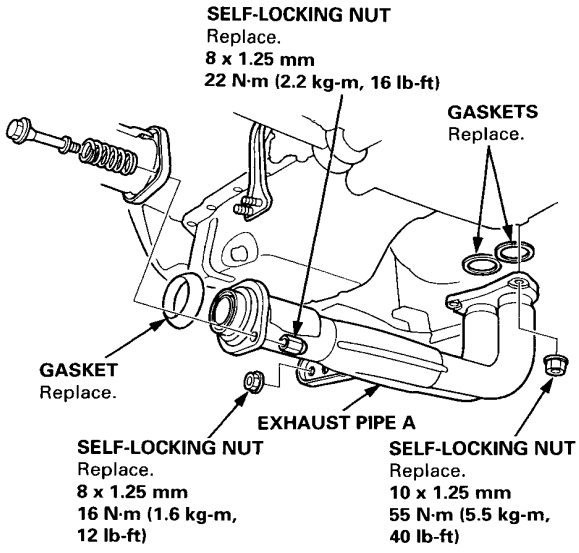
12. Install the change extension.



(cont'd)

Installation (cont'd)

13. Install exhaust pipe A.

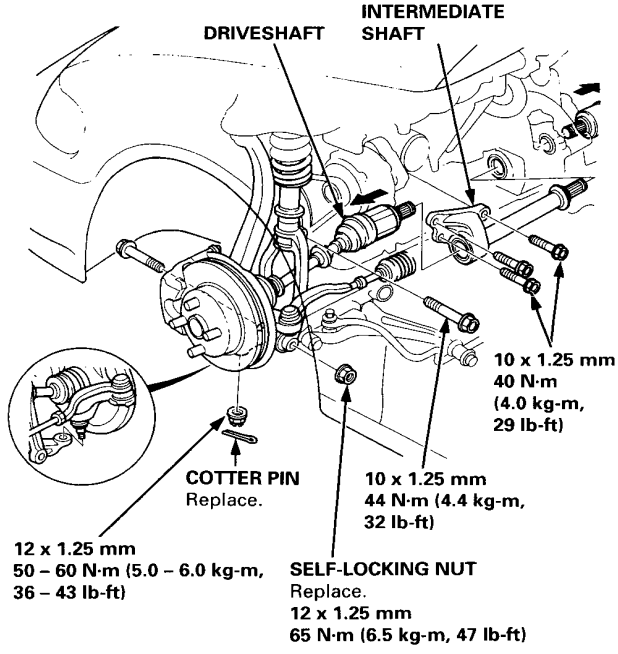


14. Install the intermediate shaft and driveshafts.

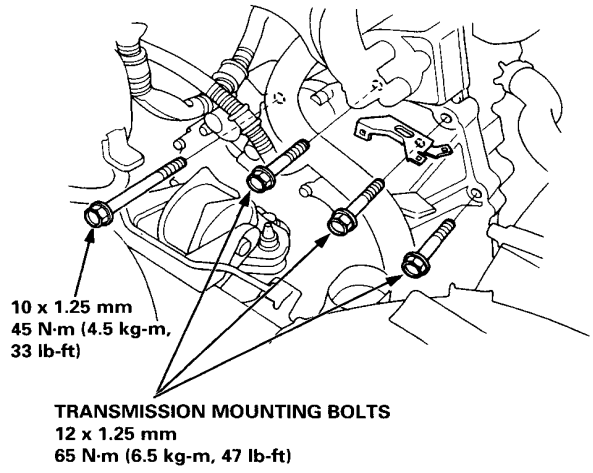
    NOTE: Use the set rings with new ones.

15. Install the ball joint onto the lower arm.

16. Install the damper fork.

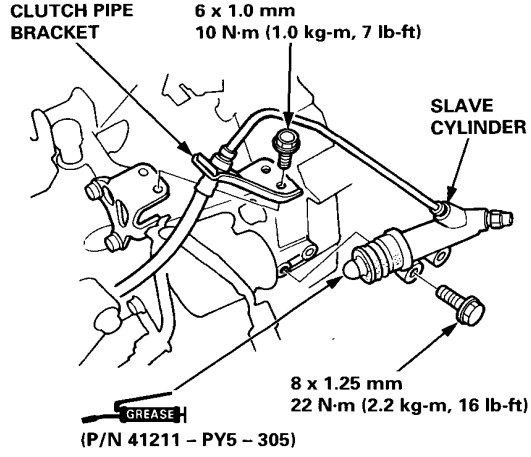


17. Install the transmission mounting bolts and lower starter mounting bolt.



18. Install the slave cylinder, then install the clutch pipe bracket.

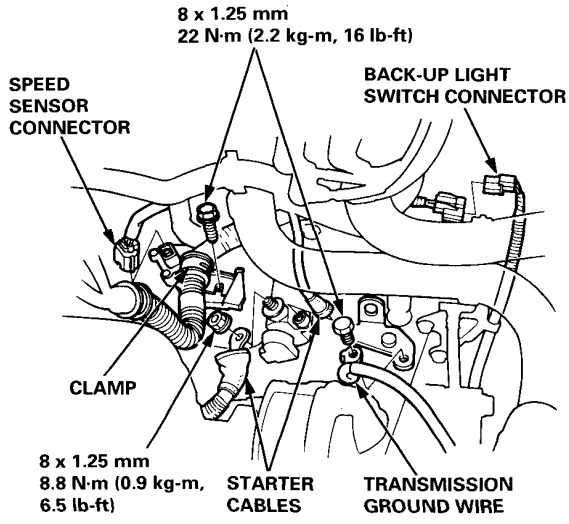
    NOTE: Use only HONDA Genuine Urea Grease UM264 (P/N 41211 – PY5 – 305).



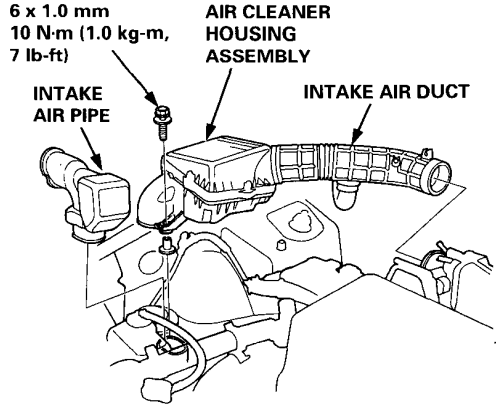
19. Connect the speed sensor, back-up light switch connectors, transmission ground wire, and starter cables.

    NOTE: When installing the starter cable, make sure that the crimped side of the ring terminal is facing out (see section 23).

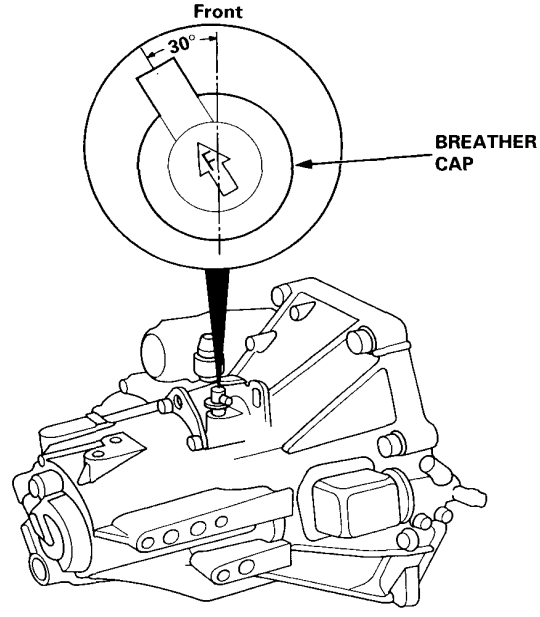
20. Install the wire harness clamp.



21. Install the intake air duct, air cleaner housing assembly, and intake air pipe.



22. Turn the breather cap so that the "F" mark points at an angle of 30° towards the front of the car as shown.



23. Refill the transmission with oil.

24. Connect the positive (+) cable first, then the negative (–) cable to the battery.

25. Check the clutch operation.

26. Shift the transmission and check for smooth operation.

27. Adjust ignition timing (see section 23).

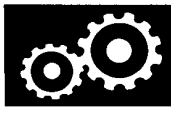
28. Check the front wheel alignment (see section 18).

2WD Manual Transmission Y21

Transmission Assembly Removal 13-12

Shift Fork Assembly Index 13-16

Transmission Assembly Installation 13-17



Outline of Model Changes

- The transmission mount, right front mount/bracket, and rear mount bracket have been modified.
- Torque value of transmission mounting bolts have been changed.
- Torque value of transmission mount bolt has been changed.
- The shift forks have been changed.

Transmission Assembly

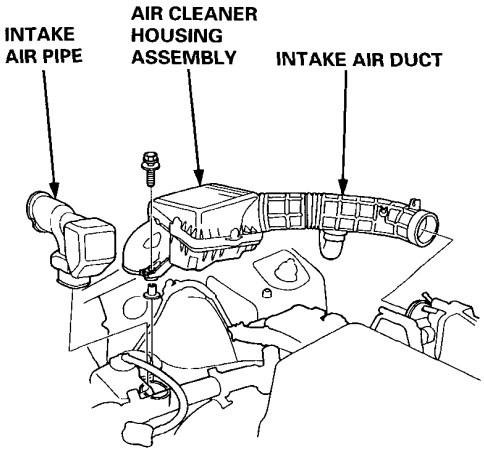
Removal

⚠ WARNING

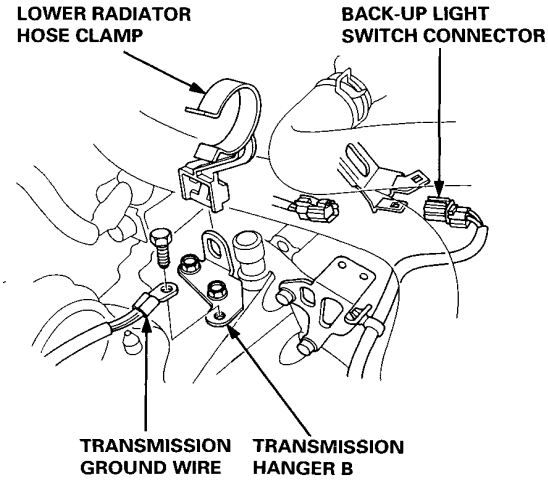
- **Make sure jacks and safety stands are placed properly (see section 1).**
- **Apply parking brake and block rear wheels so car will not roll off stands and fall on you while working under it.**

CAUTION: Use fender covers to avoid damaging painted surfaces.

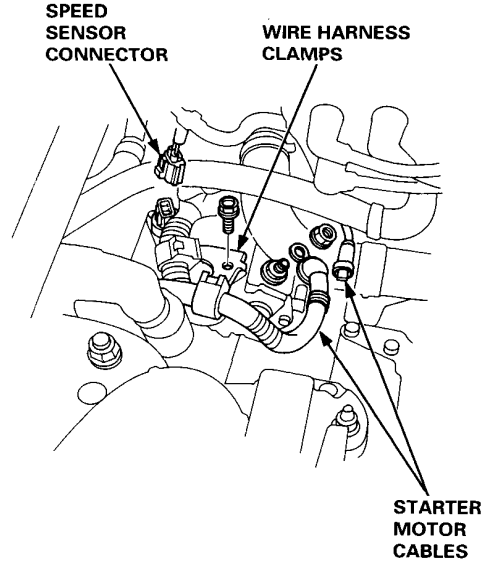
1. Disconnect the negative (–) cable first, then the positive (+) cable from the battery.
2. Drain the transmission oil, then reinstall the drain plug with a new washer.
3. Remove the intake air pipe, intake air duct, and the air cleaner housing assembly.



4. Disconnect the back-up light switch connector and the transmission ground wire.
5. Remove the lower radiator hose clamp from transmission hanger B.

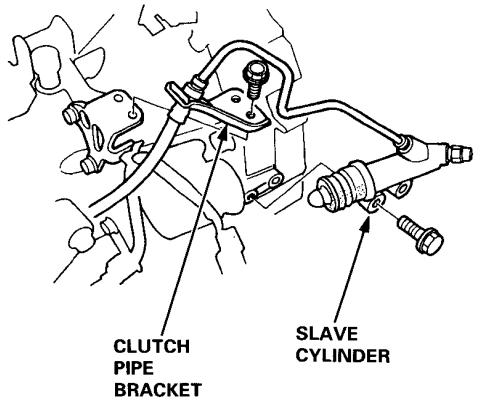


6. Remove the wire harness clamps.
7. Disconnect the starter motor cables and the speed sensor connector.

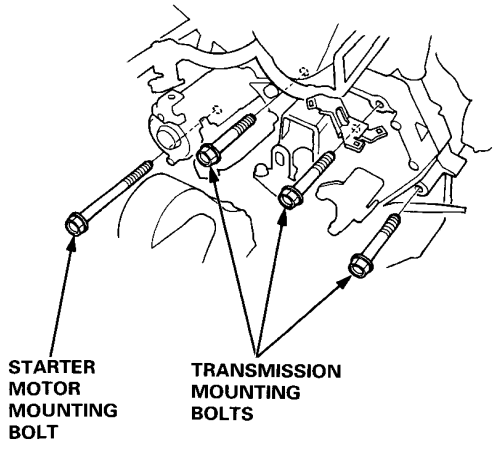


8. Remove the clutch pipe bracket and the slave cylinder.

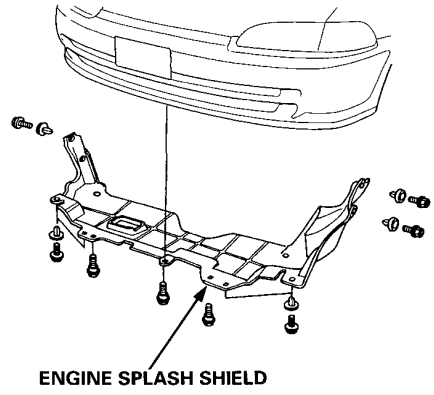
   NOTE: Do not operate the clutch pedal once the slave cylinder has been removed.



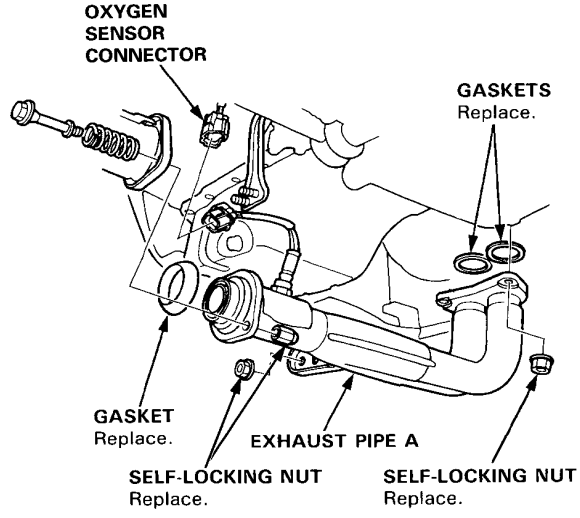
9. Remove the three upper transmission mounting bolts and lower starter motor mounting bolt.



10. Remove the engine splash shield.



11. Disconnect the oxygen sensor connector, then remove exhaust pipe A.

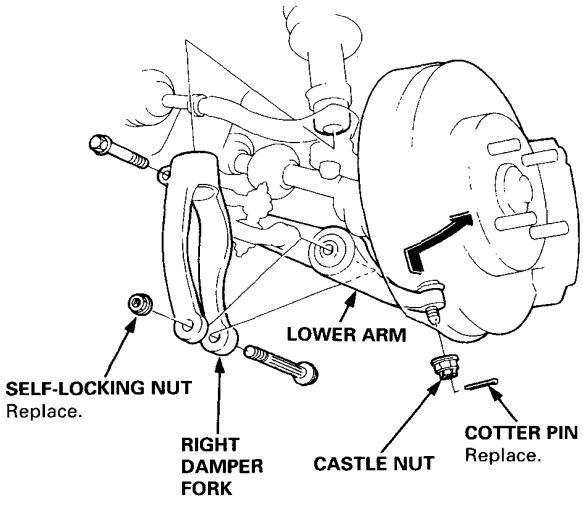


(cont'd)

Removal (cont'd)

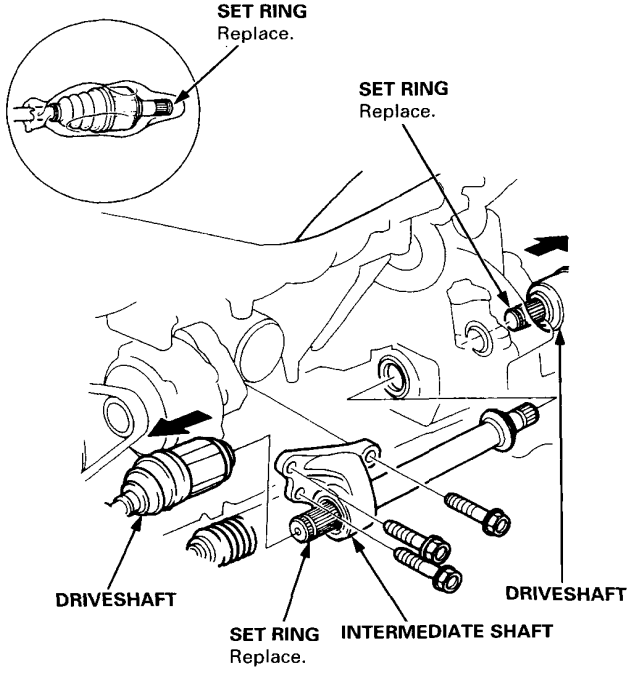
12. Remove the cotter pins and loosen the castle nuts, then separate the ball joints from the lower arm (see section 18).

13. Remove the right damper fork.



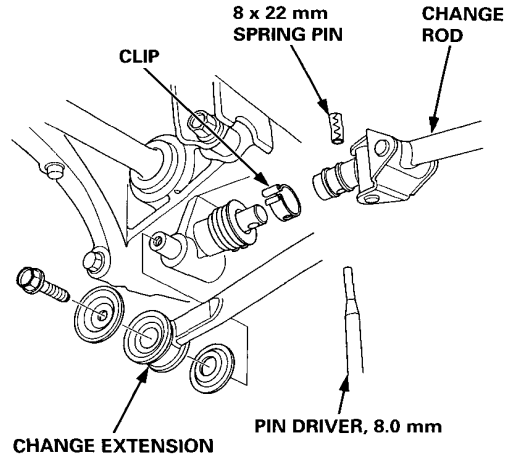
14. Remove the driveshafts and the intermediate shaft (see section 16).

NOTE: Coat all the precision finished surfaces with clean engine oil or grease. Tie plastic bags over the driveshaft ends.

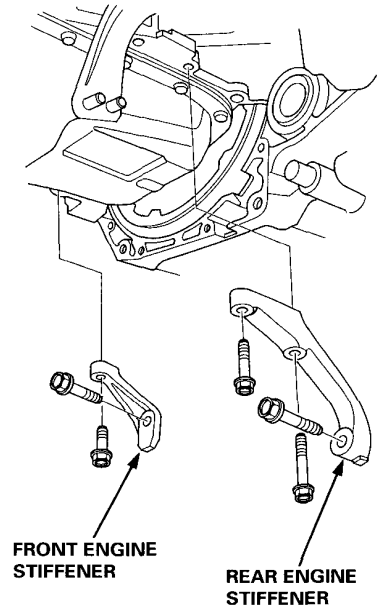


15. Remove the bolt, then disconnect the change extension.

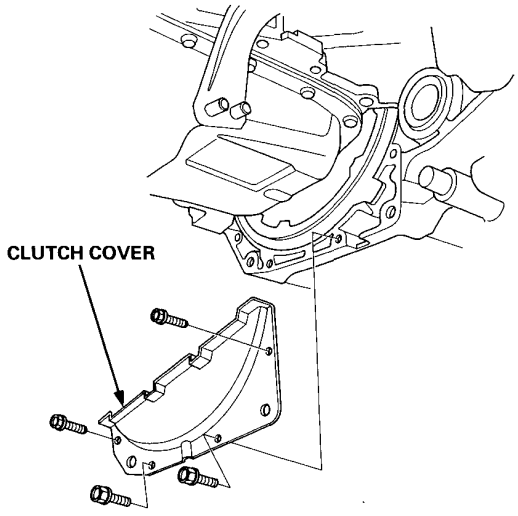
16. Remove the clip and the spring pin, then disconnect the change rod.



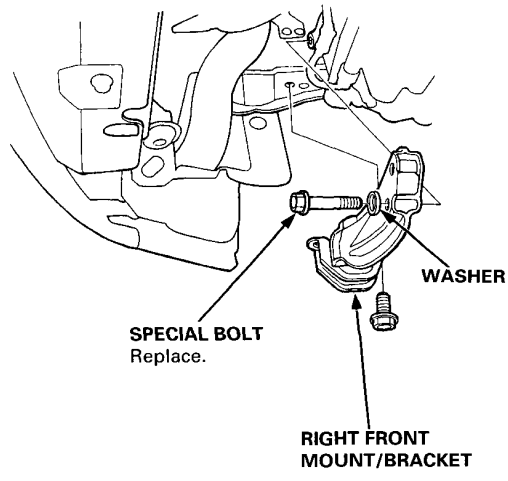
17. Remove the front and the rear engine stiffeners.



18. Remove the clutch cover.

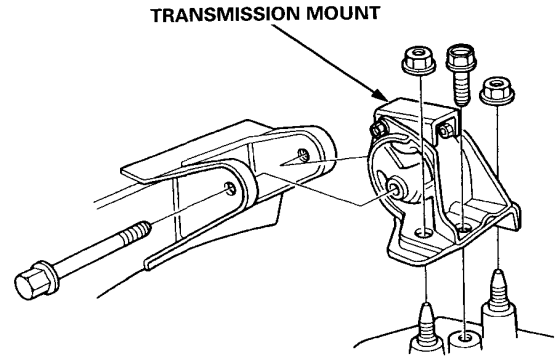


19. Remove the right front mount/bracket.

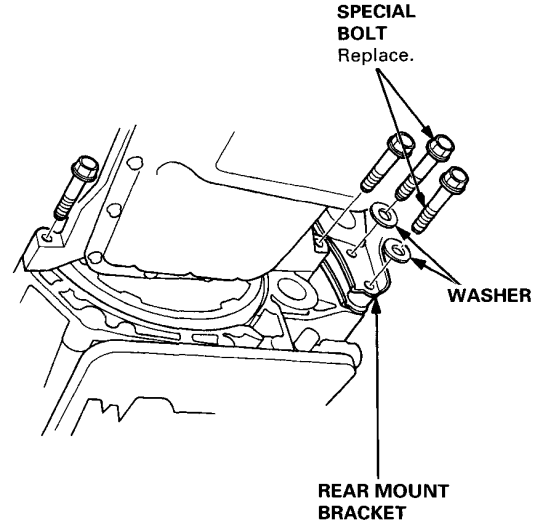


20. Place a transmission jack under the transmission and a jack stand under the engine.

21. Remove the transmission mount.



22. Remove the rear mount bracket bolts and the transmission mounting bolts.

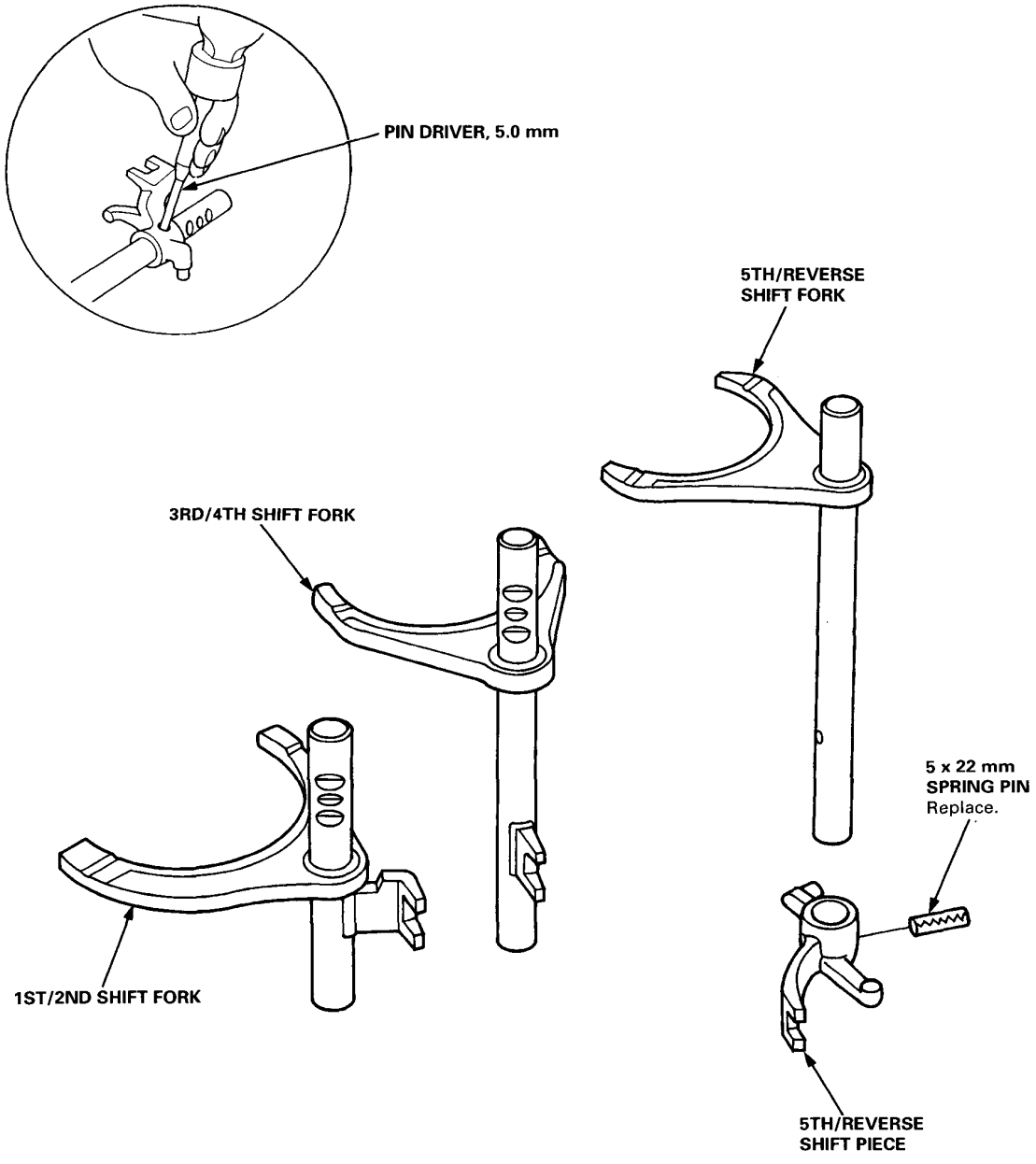


23. Pull the transmission away from the engine until it clears the mainshaft, then lower it on the transmission jack.

Shift Fork Assembly

Index

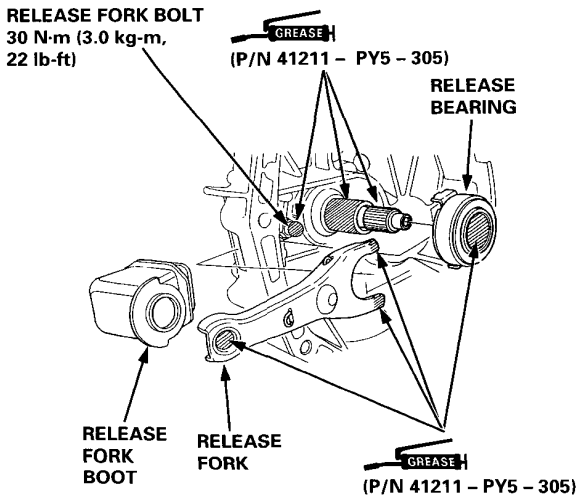
OIL Prior to reassembling, clean all the parts in solvent, dry them, and apply lubricant to any contact parts.



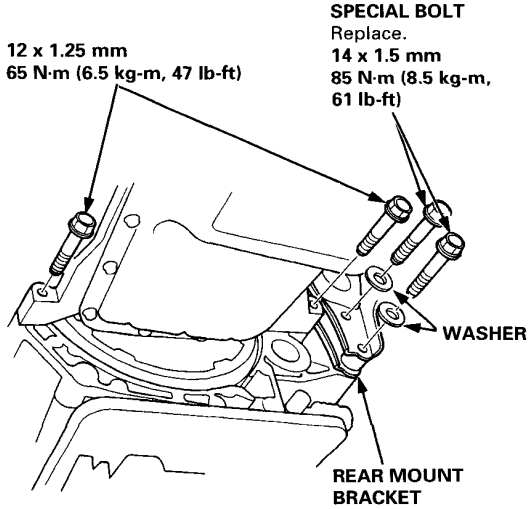
Installation

1. Install the dowel pins on the clutch housing.
2. Apply grease to the parts as shown, then install the release fork and release bearing.

   NOTE: Use only HONDA Genuine Urea Grease UM264 (P/N 41211 – PY5 – 305).
3. Install the release fork boot.



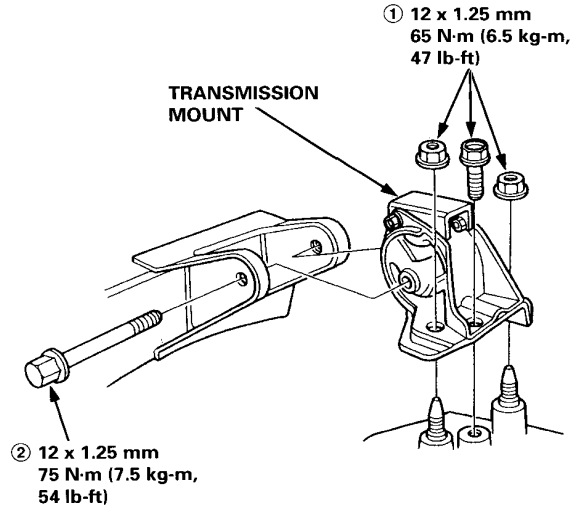
4. Place the transmission on the transmission jack, and raise it to the engine level.
5. Install the transmission mounting bolts and the rear mount bracket bolts.



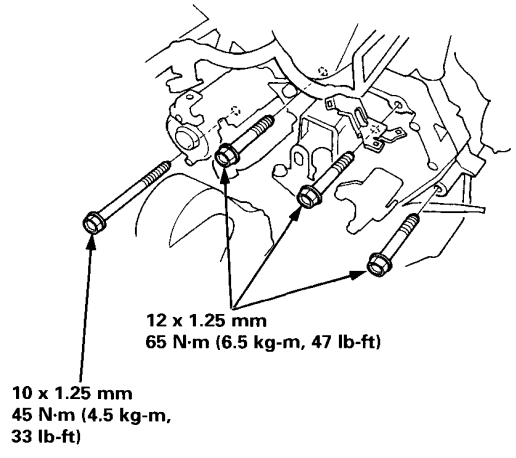
6. Raise the transmission, then install the transmission mount.

   NOTE: Torque the mounting bolt and nuts in the sequence shown.

   CAUTION: Check that the bushings are not twisted or offset.



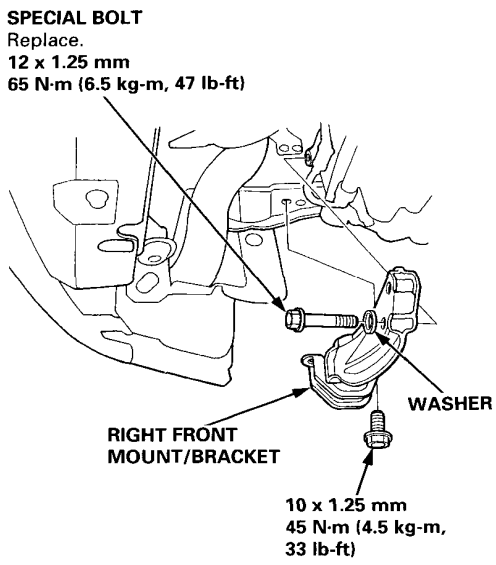
7. Install the three upper transmission mounting bolts and lower starter motor mounting bolt.



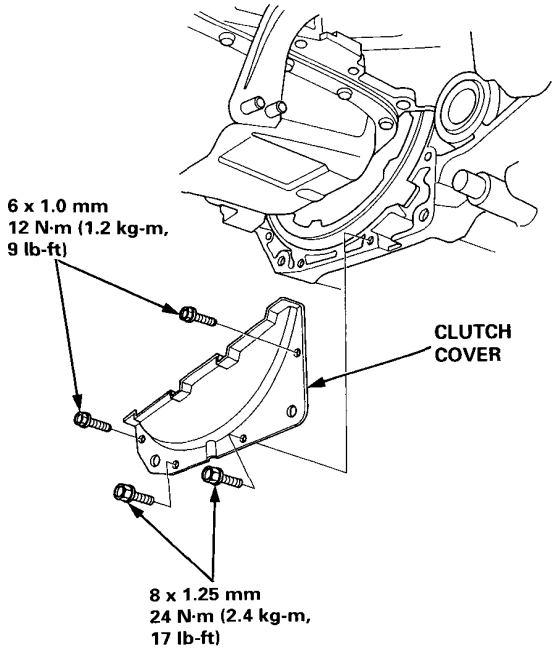
(cont'd)

Installation (cont'd)

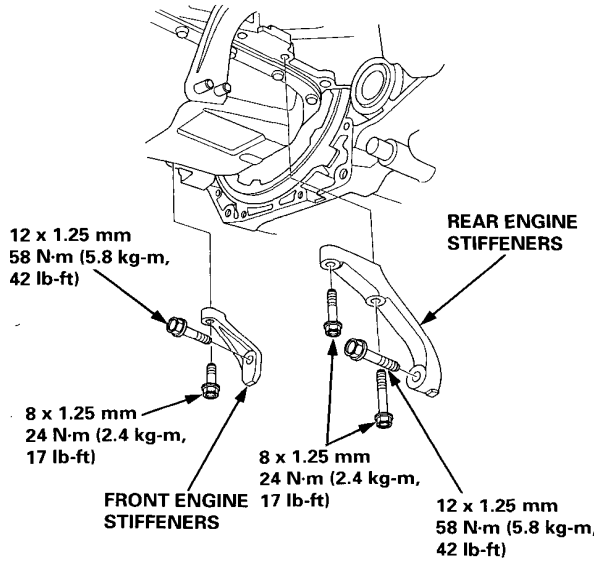
8. Install the right front mount/bracket.



9. Install the clutch cover.



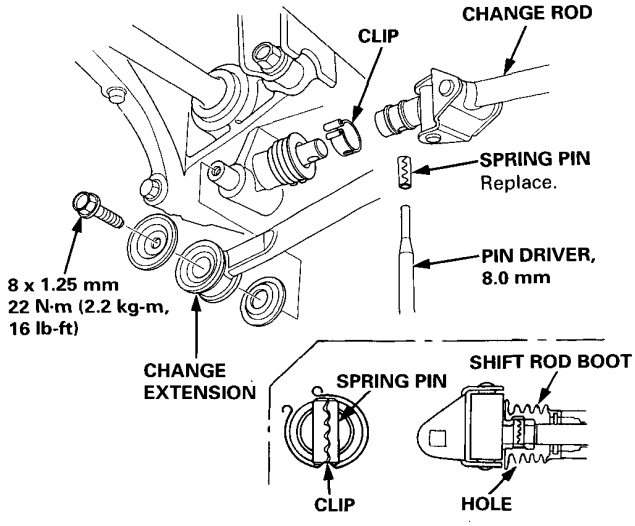
10. Install the front and rear engine stiffeners.



11. Install the change rod, the spring pin, and the clip.

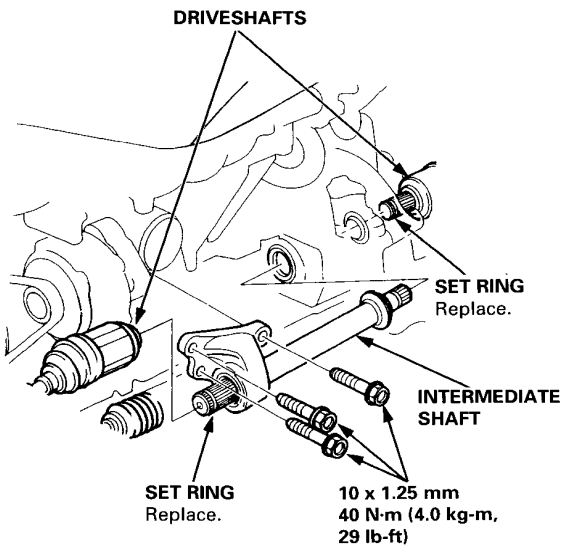
NOTE:
- Install the clip and the spring pin on the change joint as shown.
- Turn the shift rod boot so the hole is facing down as shown.
- Make sure the shift rod boot is installed on the change rod.

12. Install the change extension.



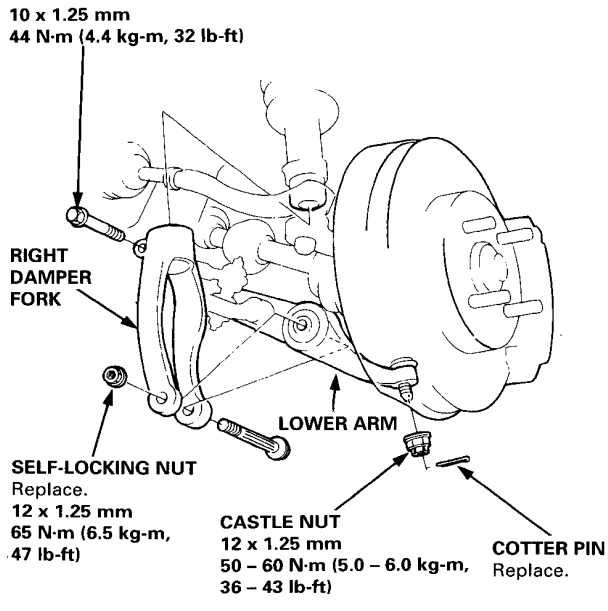
13. Install the intermediate shaft and the driveshafts (see section 16).

NOTE: Replace the set rings with new ones.

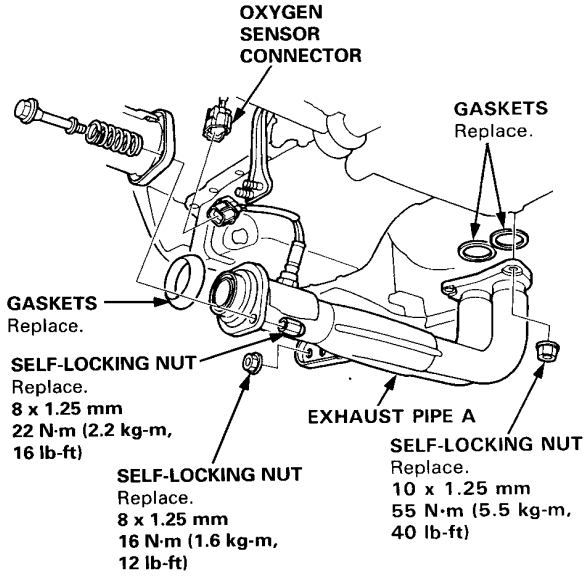


14. Install the ball joints onto the lower arm (see section 18).

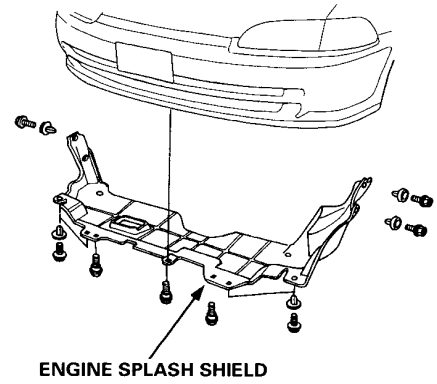
15. Install the right damper fork (see section 18).



16. Install exhaust pipe A, then connect the oxygen sensor connector.



17. Install the engine splash shield.

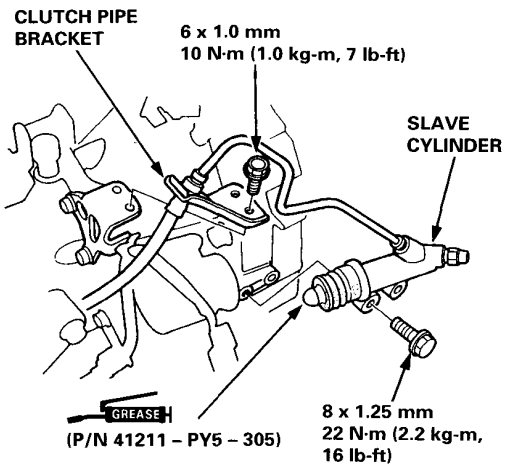


(cont'd)

Installation (cont'd)

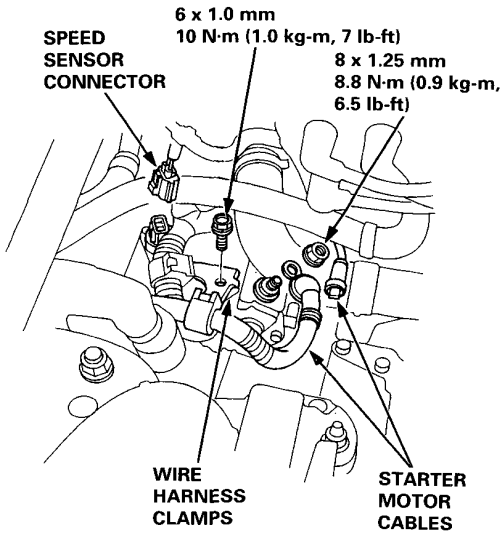
18. Install the slave cylinder, then install the clutch pipe bracket.

    NOTE: Use only HONDA Genuine Urea Grease UM264 (P/N 41211 – PY5 – 305).



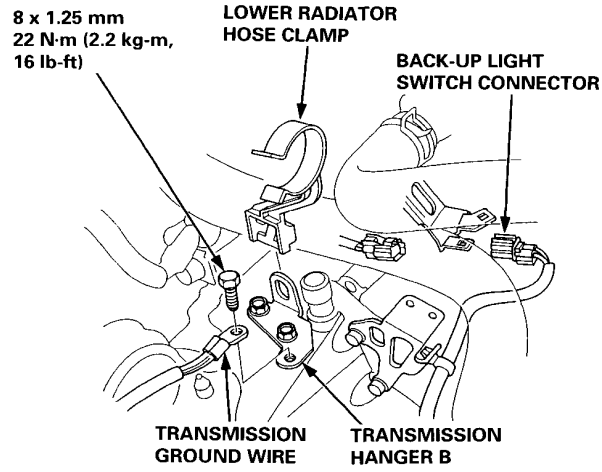
19. Connect the speed sensor connector and the starter motor cables.

20. Install the wire harness clamps.

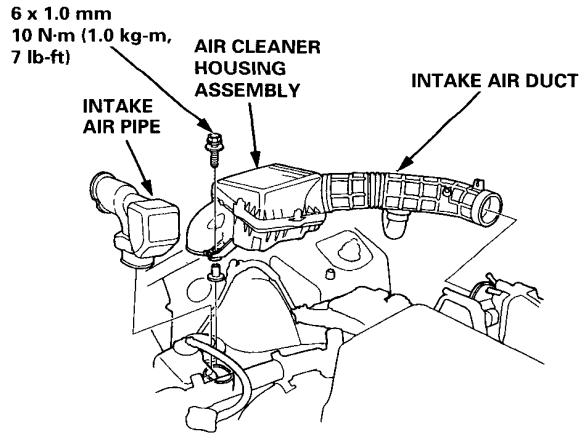


21. Install the lower radiator hose clamp on transmission hanger B.

22. Connect the transmission ground wire and the back-up light switch connector.


8 x 1.25 mm
22 N·m (2.2 kg-m, 16 lb-ft)
LOWER RADIATOR HOSE CLAMP
BACK-UP LIGHT SWITCH CONNECTOR
TRANSMISSION GROUND WIRE
TRANSMISSION HANGER B

23. Install the air cleaner housing assembly, intake air duct, and intake air pipe.



24. Refill the transmission with oil.

25. Connect the positive (+) cable first, then the negative (–) cable to the battery.

26. Check the clutch operation.

27. Shift the transmission, and check for smooth operation.

28. Check the front wheel alignment (see section 18).

4WD Manual Transmission S22

Service Precautions 13-22
Special Tools 13-23
Transmission Assembly Removal 13-24
Illustrated Index 13-28
Transmission Housing Removal 13-32
Mainshaft, Countershaft Assemblies Removal 13-33
Transfer Shaft Bearing Replacement 13-35
Transmission Reassembly 13-35
Transmission Assembly Installation 13-39

Outline of Model Changes

- The transmission mount, right front mount/bracket, and rear mount bracket have been modified.
- Torque value of transmission mounting bolts have been changed.
- The super-low shaft, 2 – 4 select lever, and transfer shaft have been changed.

Service Precautions (4WD)

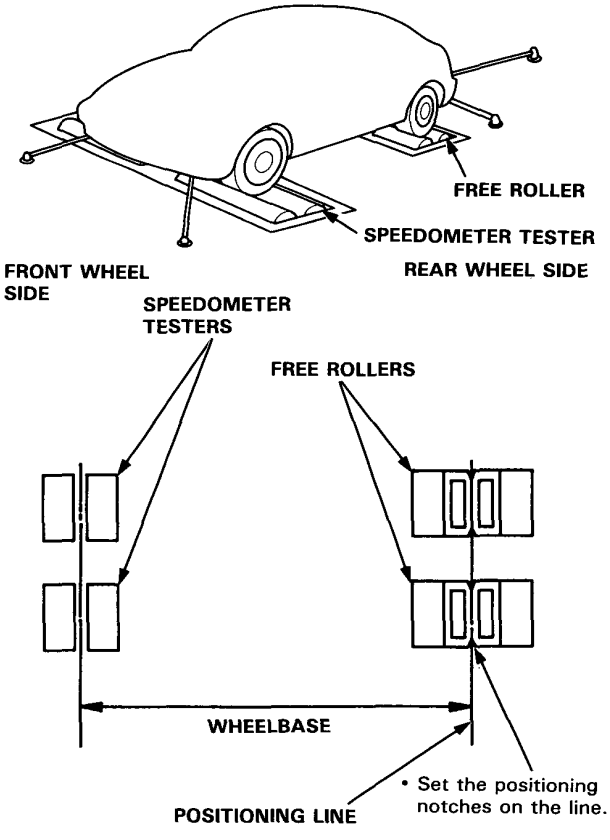
This 4-wheel drive model is not equipped with the system that mechanically shifts the drive system to the 2-wheel drive.

Therefore, perform the speedometer test by using the free rollers.

Tip on use of free roller:
- Test cannot be made by using the chassis dynamometer.
- Do not operate the accelerator pedal, clutch, brake system and steering wheel quickly. The car can roll hard or dash out during the test which is very dangerous.
- Do not raise the speed more than 50 km/h.
- Do not use the free rollers continuously for more than 3 minutes at one try.
- Secure the car for safety. Attach the ropes to the car not to allow it to roll or dash out during the test. (Use the free rollers for the rear wheels)

1. Set each of the free rollers at the wheelbase and track of the car.

   NOTE: Be sure that the free rollers and speedometer tester rollers are set parallel with each other.

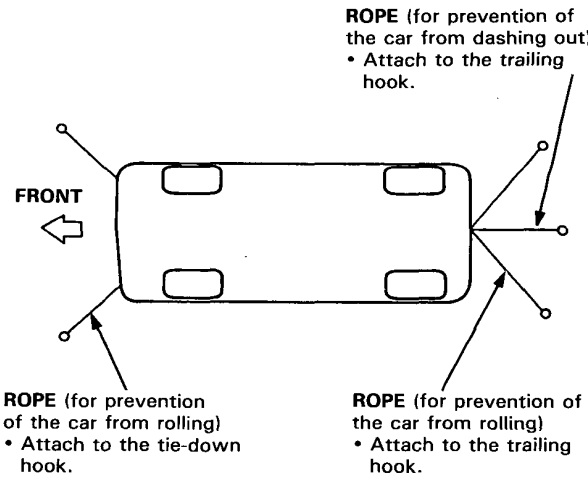


2. Move the car to set the front wheels on the speedometer testers and the rear wheels on the free rollers. Be sure that the wheels are set at the center of the speedometer testers and free rollers respectively.

   CAUTION: Be sure that the front and rear wheels are set at the center of the speedometer tester and free rollers securely, or the car can roll hard or dash out during the test, which is very dangerous.

3. Attach the ropes to the trailing hook and tie-down hooks to secure the car (For prevention of the car from rolling hard or dashing out during the test).

   CAUTION:
   - **Be sure that the ropes attached to the car for prevention of rolling are not slack. Slack ropes do not effectively secure the car and the car can roll during the test.**
   - **Attach the ropes to the car not to interfere with the bumper.**
   - **Do not attach the ropes to any section other than the specified section.**

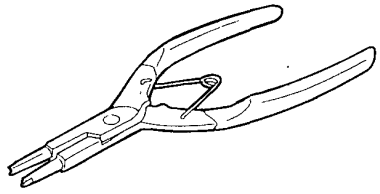

ROPE (for prevention of the car from dashing out)
• Attach to the trailing hook.
FRONT
ROPE (for prevention of the car from rolling)
• Attach to the tie-down hook.
ROPE (for prevention of the car from rolling)
• Attach to the trailing hook.

4. Start the engine. With the gearshift lever in the 3rd range on the manual transmission car or the gearshift lever in the D1 or D2 position on the automatic transmission car, start the car and raise the speed gradually.

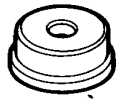
   CAUTION: Take care not to exceed 50 km/h of speed and do not test for more than 3 minutes continuously.

5. After the test, slow down the car until it stops by applying the brake gradually.

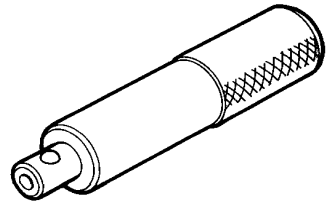
Ref. No.	Tool Number	Description	Qty	Page Reference
①	07LGC – 0010100	Snap Ring Pliers	1	13-33, 37
②	07746 – 0010700	Outer Driver, 24 x 26 mm	1	13-35
③	07749 – 0010000	Outer Handle A	1	13-35



①



②



③

Transmission Assembly

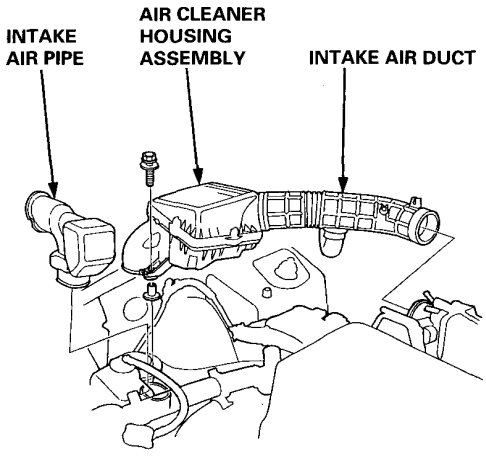
Removal

⚠ WARNING

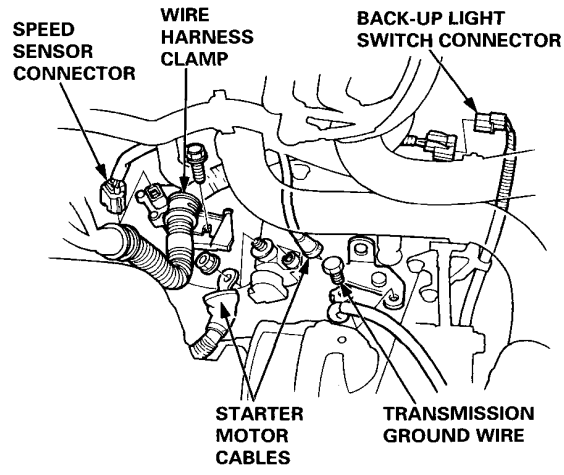
- **Make sure jacks and safety stands are placed properly (see section 1).**
- **Apply parking brake and block rear wheels so car will not roll off stands and fall on you while working under it.**

CAUTION: Use fender covers to avoid damaging painted surfaces.

1. Disconnect the negative (–) cable first, then the positive (+) cable from the battery.
2. Drain the transmission oil, then reinstall the drain plug with a new washer.
3. Remove the intake air pipe, intake air duct, and the air cleaner housing assembly.

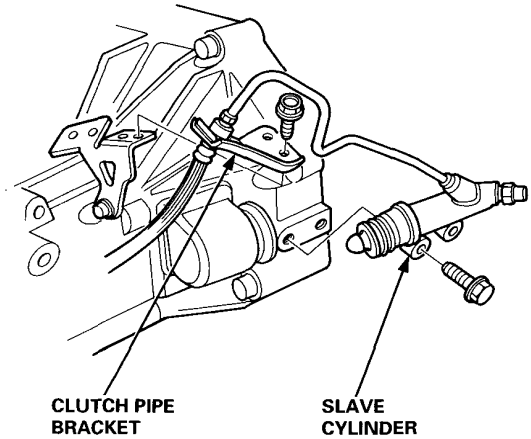


4. Disconnect the starter motor cables and the transmission ground wire.
5. Remove the wire harness clamp.
6. Disconnect the back-up light switch and the speed sensor connectors.



7. Remove the clutch pipe bracket and the slave cylinder.

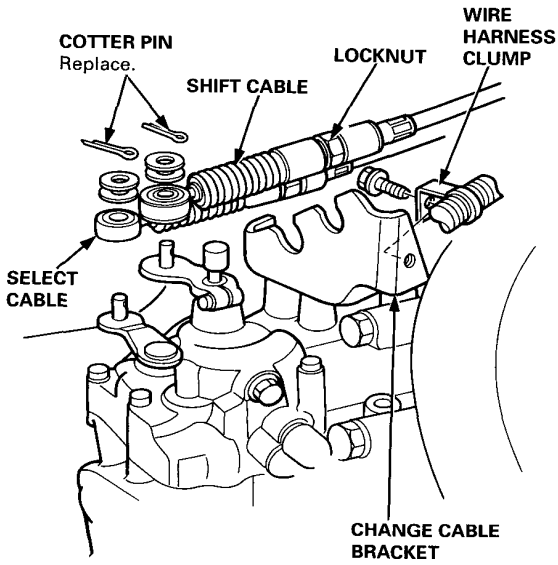
   NOTE: Do not operate the clutch pedal once the slave cylinder has been removed.



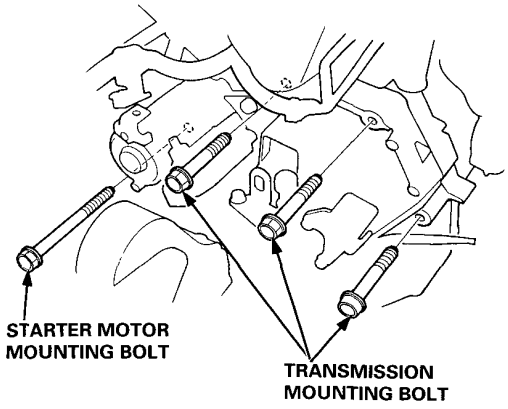
8. Remove the cotter pins, then loosen the locknuts and remove the select and shift cables.

   NOTE: Take care not to bend the cables when removeing from them and hang them by cable up to the body.

9. Remove the wire harness clump from the change cable bracket.

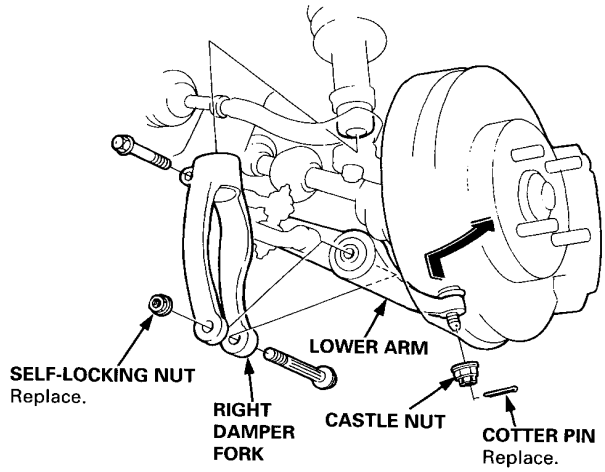


10. Remove the three transmission mounting bolts and starter motor mounting bolt.



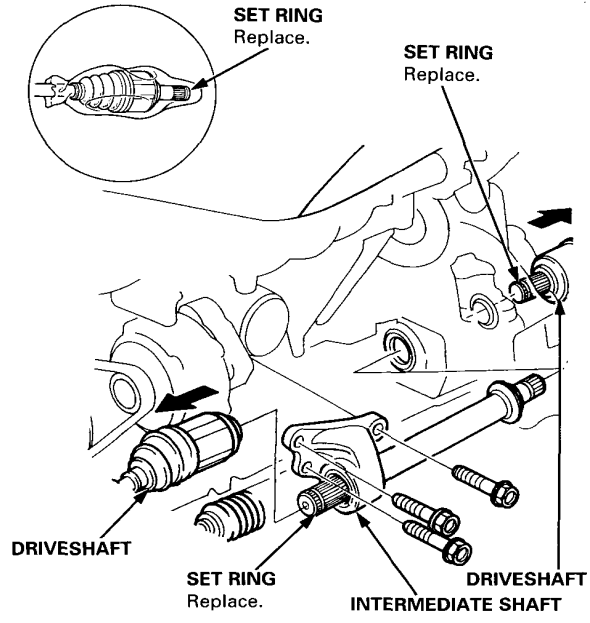
11. Remove the cotter pins and the loosen castle nuts, then separate the ball joints from the lower arm (see section 18).

12. Remove the right damper fork.



13. Remove the driveshafts and the intermediate shaft (see section 16).

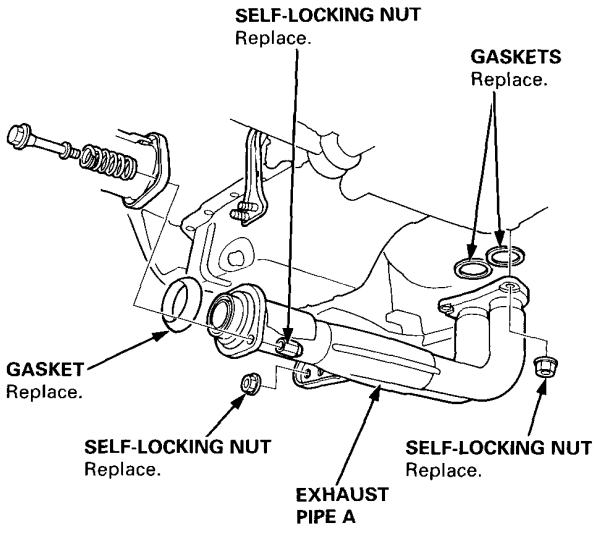
    NOTE: Coat all precision finished surfaces with clean engine oil or grease. Tie plastic bags over the driveshaft ends.



(cont'd)

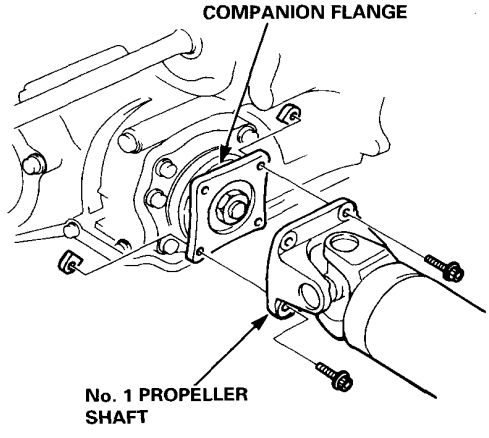
Removal (cont'd)

14. Remove exhaust pipe A.

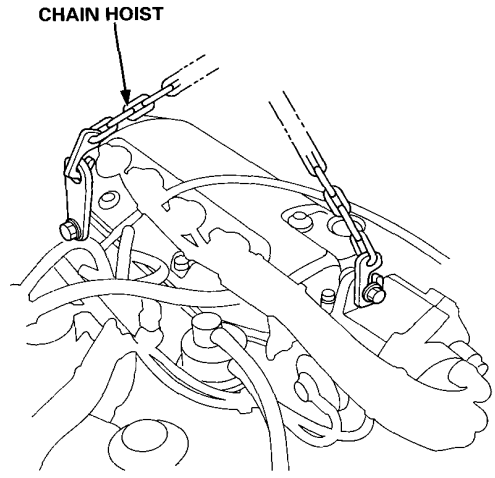


15. Disconnect the No. 1 propeller shaft from the companion flange.

    NOTE: Mark the shaft and companion flange before disconnecting them.

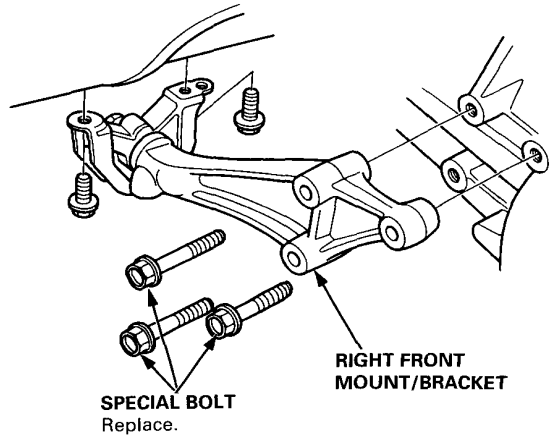


16. Install the bolts in the cylinder head and attach a chain hoist to the bolts, then lift the engine slightly to unload the mounts.



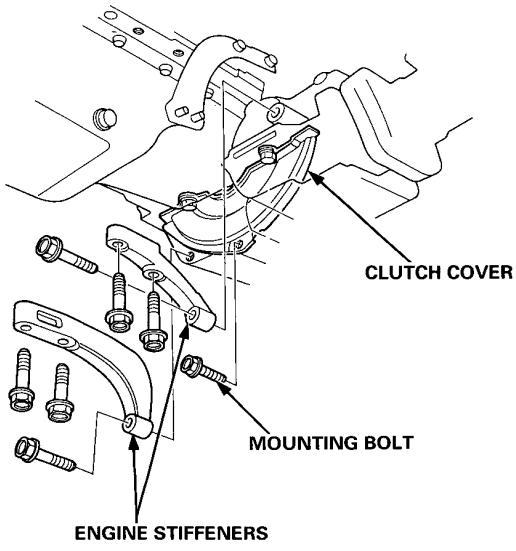
17. Remove the engine splash shield.

18. Remove the right front mount/bracket.

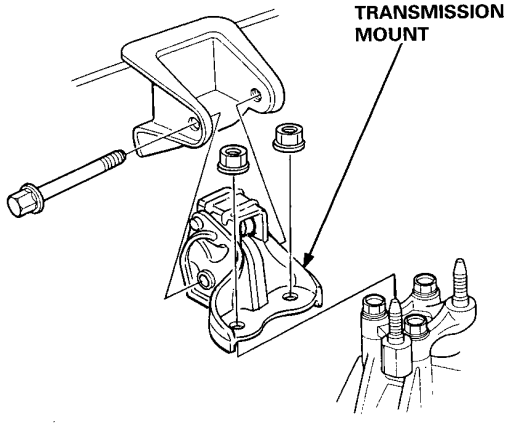


19. Remove the front and the rear engine stiffeners.

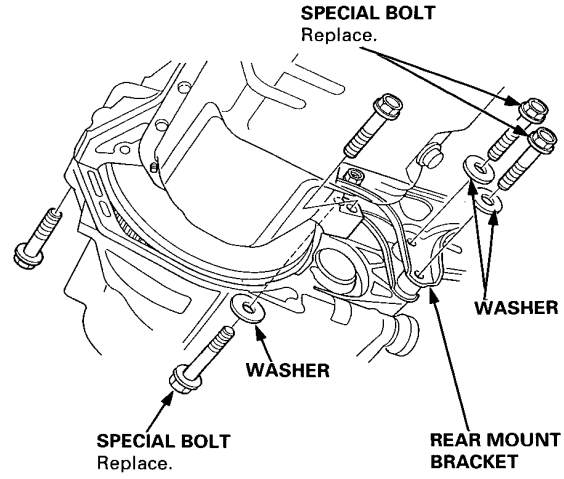
20. Remove the clutch cover mounting bolt.



21. Place a jack under the transmission, then remove the transmission mount.

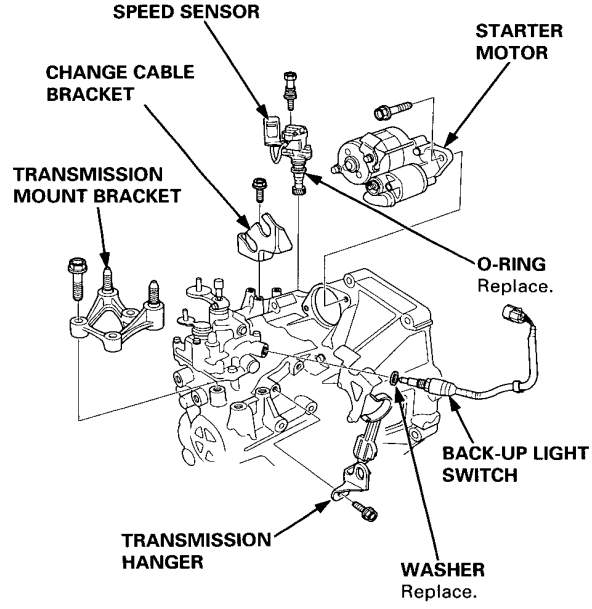


22. Remove the rear mount bracket bolts and the transmission mounting bolts.



23. Pull the transmission away from the engine until it clears the mainshaft, then lower it on the transmission jack.

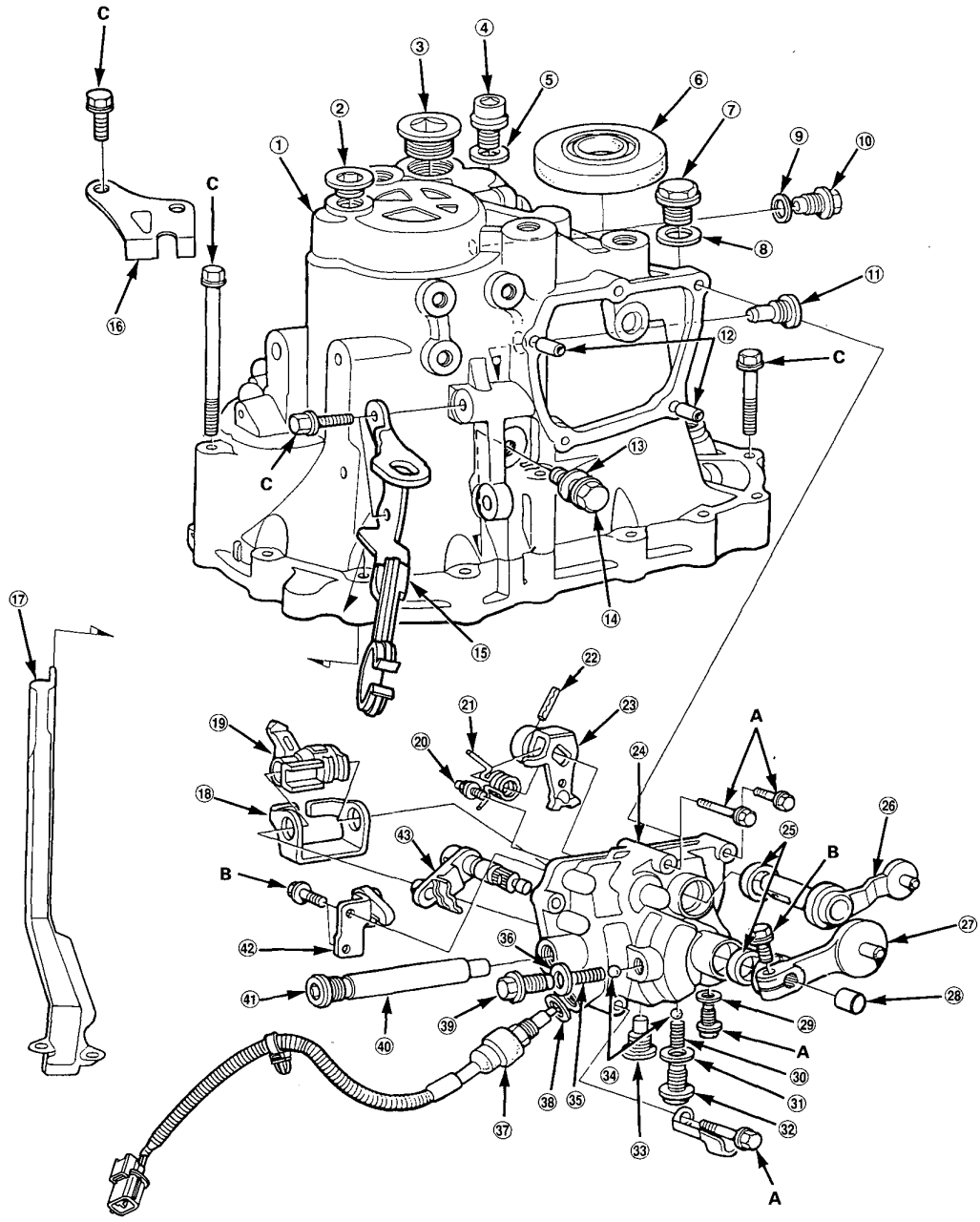
24. Remove the parts below as shown.



Refer to the drawing below for the transmission disassembly.
Clean all the parts thoroughly in solvent and dry with compressed air.

OIL Lubricate all the parts with oil before reassembly.

NOTE:
- This transmission uses no gaskets between the major housings; use liquid gasket (P/N 0Y740 – 99986).
- Inspect all the bearings for wear and operation.



	Bolt Size	Torque
A	6 x 1.0 mm	12 N·m (1.2 kg-m, 9 lb-ft)
B	6 x 1.0 mm	15 N·m (1.5 kg-m, 11 lb-ft)
C	8 x 1.25 mm	25 N·m (2.5 kg-m, 18 lb-ft)

① **TRANSMISSION HOUSING**
② **18 mm SEALING BOLT**
35 N·m (3.5 kg-m, 25 lb-ft)
③ **32 mm SEALING BOLT**
70 N·m (7.0 kg-m, 51 lb-ft)
④ **DRAIN PLUG**
40 N·m (4.0 kg-m, 29 lb-ft)
⑤ **14 mm WASHER**
Replace.
⑥ **40 x 76 x 9 mm OIL SEAL**
Replace.
⑦ **OIL FILLER PLUG**
45 N·m (4.5 kg-m, 33 lb-ft)
⑧ **14 mm WASHER**
Replace.
⑨ **12 mm WASHER**
Replace.
⑩ **SET BALL SCREW**
22 N·m (2.2 kg-m, 16 lb-ft)
⑪ **SUPER-LOW LEVER CENTER BOLT**
40 N·m (4.0 kg-m, 29 lb-ft)
⑫ **8 x 14 mm DOWEL PIN**
⑬ **10 mm WASHER**
Replace.
⑭ **REVERSE IDLER GEAR SHAFT BOLT**
10 x 1.25 mm
55 N·m (5.5 kg-m, 40 lb-ft)
⑮ **TRANSMISSION HANGER**
⑯ **CLUTCH PIPE BRACKET**
⑰ **OIL GUTTER PLATE**
⑱ **INTERLOCK**
⑲ **SHIFT ARM A**
⑳ **SELECT RETURN PIN**
12 N·m (1.2 kg-m, 9 lb-ft)
㉑ **SELECT RETURN SPRING**
㉒ **5 x 22 mm SPRING PIN**
Replace.
㉓ **SELECT ARM**
㉔ **SHIFT ARM COVER**
㉕ **16 x 23 x 5 mm OIL SEAL**
Replace.
㉖ **SELECT LEVER**
㉗ **SHIFT LEVER**
㉘ **BREATHER CAP**
㉙ **6 mm WASHER**
Replace.
㉚ **SPRING L 20.7 mm (0.815 in)**
㉛ **12 mm WASHER**
Replace.
㉜ **SET BALL SCREW**
22 N·m (2.2 kg-m, 16 lb-ft)
㉝ **INTERLOCK BOLT**
40 N·m (4.0 kg-m, 29 lb-ft)
㉞ **STEEL BALL**
㉟ **SPRING L 23.5 mm (0.925 in)**
㊱ **12 mm WASHER**
Replace.
㊲ **BACK-UP LIGHT SWITCH**
25 N·m (2.5 kg-m, 19 lb-ft)
㊳ **14 mm WASHER**
Replace.
㊴ **SET BALL SCREW**
22 N·m (2.2 kg-m, 16 lb-ft)
㊵ **SHIFT ARM SHAFT**
㊶ **18 mm PLUG BOLT**
40 N·m (4.0 kg-m, 29 lb-ft)
㊷ **REVERSE LOCK CAM**
㊸ **SHIFT ARM**

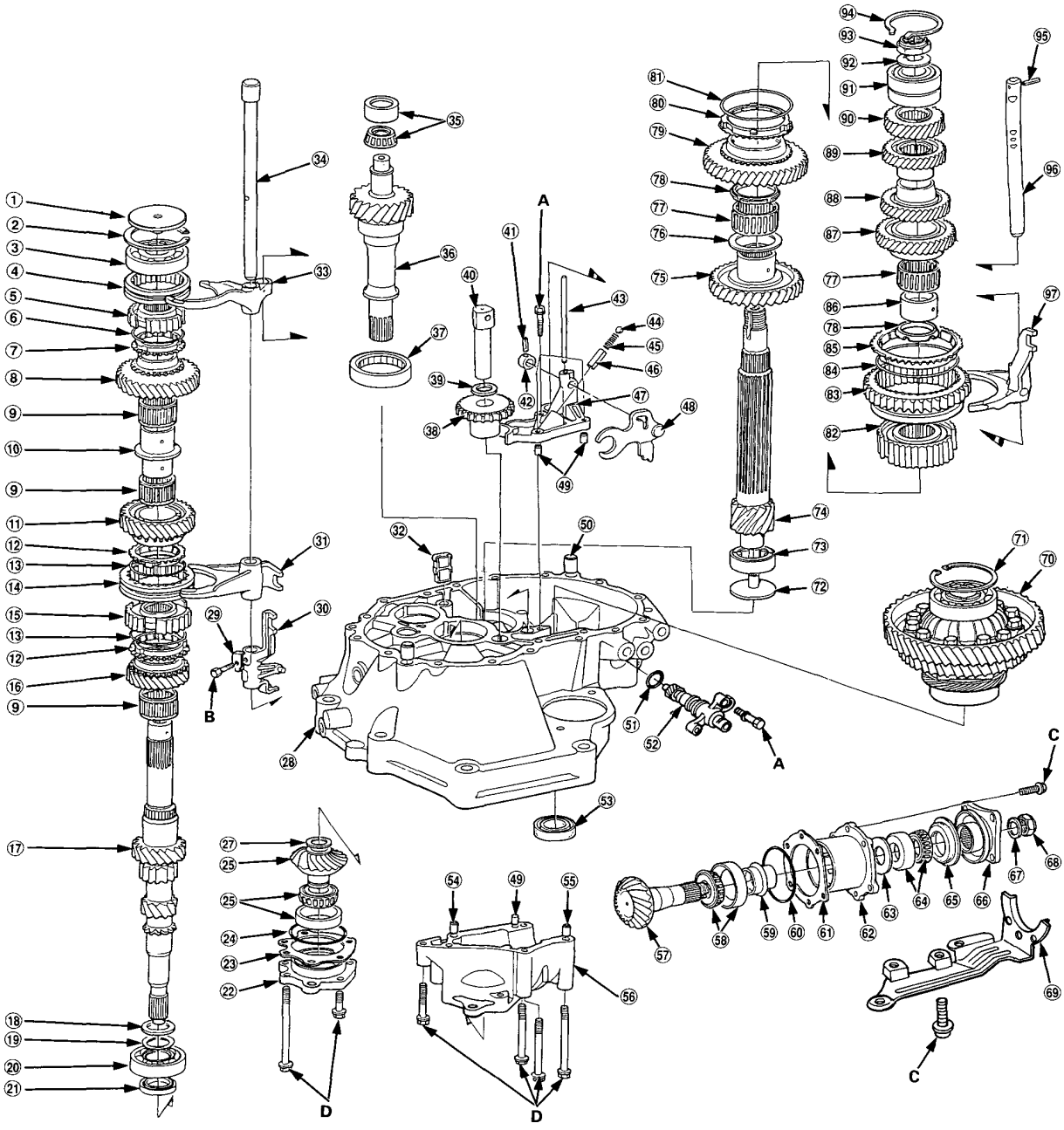
Illustrated Index

Refer to the drawing below for the transmission disassembly.
Clean all the parts thoroughly in solvent and dry with compressed air.

OIL Lubricate all the parts with oil before reassembly.

NOTE:

- This transmission uses no gaskets between the major housings; use liquid gasket (P/N 0Y740 – 99986).
- Inspect all the bearings for wear and operation.
- Always clean the magnet ㉜ whenever the transmission housing is disassembled.



	Bolt Size	Torque
A	6 x 1.0 mm	12 N·m (1.2 kg-m, 9 lb-ft)
B	6 x 1.0 mm	17 N·m (1.7 kg-m, 12 lb-ft)
C	8 x 1.25 mm	25 N·m (2.5 kg-m, 18 lb-ft)
D	10 x 1.25 mm	45 N·m (4.5 kg-m, 33 lb-ft)

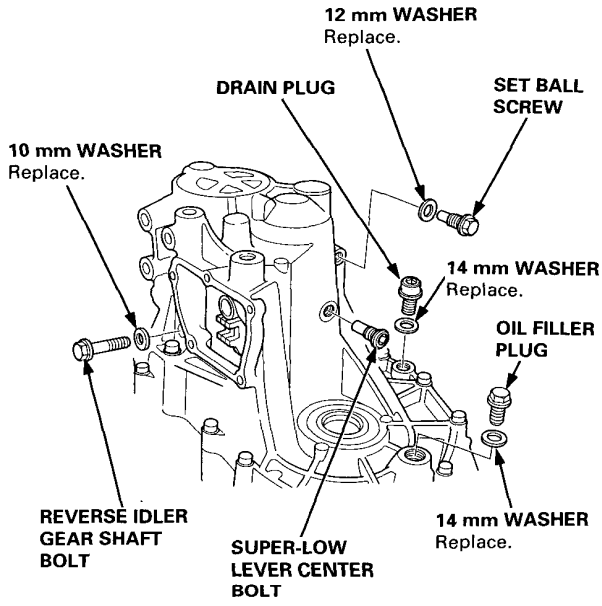
① OIL GUIDE PLATE M
② 75 mm THRUST SHIM
③ BALL BEARING
④ 5TH SYNCHRO SLEEVE
⑤ 5TH SYNCHRO HUB
⑥ SYNCHRO SPRING
⑦ SYNCHRO RING
⑧ 5TH GEAR
⑨ 35 x 40 x 26 mm NEEDLE BEARING
⑩ DISTANCE COLLAR
⑪ 4TH GEAR
⑫ SYNCHRO RING
⑬ SYNCHRO SPRING
⑭ 3RD/4TH SYNCHRO SLEEVE
⑮ 3RD/4TH SYNCHRO HUB
⑯ 3RD GEAR
⑰ MAINSHAFT
⑱ 28 mm WASHER
⑲ 28 mm SPRING WASHER
⑳ BALL BEARING
㉑ 28 x 41 x 7 mm OIL SEAL
Replace.
㉒ TRANSFER LEFT SIDE COVER
㉓ TRANSFER THRUST SHIM
㉔ O-RING
Replace.
㉕ TAPERED ROLLER BEARING
㉖ TRANSFER DRIVE BEVEL GEAR
㉗ THRUST SHIM
㉘ CLUTCH HOUSING
㉙ LOCK WASHER
Replace.
㉚ 5TH/REVERSE SHIFT PIECE
㉛ 3RD/4TH SHIFT FORK
㉜ MAGNET
㉝ 5TH SHIFT FORK
㉞ 5TH/REVERSE SHIFT FORK SHAFT
㉟ TAPERED ROLLER BEARING
㊱ TRANSFER SHAFT
㊲ 54 x 75 x 16 mm NEEDLE BEARING
㊳ REVERSE IDLER GEAR
㊴ REVERSE THRUST WASHER
㊵ REVERSE IDLER GEAR SHAFT
㊶ 3 x 16 mm SPRING PIN
Replace.
㊷ LOCK COLLAR
㊸ SUPER-LOW SHIFT PIECE BAR
㊹ STEEL BALL
㊺ SPRING
㊻ SPRING COLLAR
㊼ REVERSE SHIFT HOLDER
㊽ REVERSE SHIFT FORK
㊾ 8 x 14 mm DOWEL PIN
㊿ 14 x 20 mm DOWEL PIN
(51) O-RING
Replace.
(52) SPEED SENSOR
(53) 35 x 54 x 8 mm OIL SEAL
Replace.
(54) 12 x 20 mm DOWEL PIN
(55) 12 x 16 mm DOWEL PIN
(56) TRANSFER HOUSING
(57) TRANSFER DRIVEN BEVEL GEAR
(58) TAPERED ROLLER BEARING
(59) TRANSFER SPACER
(60) O-RING
Replace.
(61) DRIVEN GEAR THRUST SHIM
(62) TRANSFER REAR COVER
(63) TRANSFER THRUST WASHER
(64) TAPERED ROLLER BEARING
(65) 38 x 60 x 11 mm OIL SEAL
Replace.
(66) COMPANION FLANGE
(67) 22 mm SPRING WASHER
(68) LOCKNUT
120 – 230 N·m (12.0 – 23.0 kg-m, 87 – 166 lb-ft)
(69) TRANSFER DUST COVER
(70) DIFFERENTIAL ASSEMBLY
(71) 80 mm SNAP RING
(72) OIL GUIDE PLATE C
(73) 29 x 55 x 22 mm NEEDLE BEARING
(74) COUNTERSHAFT
(75) SUPER-LOW 3RD GEAR
(76) THRUST WASHER
(77) 44 x 50 x 24 mm NEEDLE BERING
(78) FRICTION DAMPER
(79) 1ST GEAR
(80) SYNCHRO RING
(81) SYNCHRO SPRING
(82) 1ST/2ND SYNCHRO HUB
(83) REVERSE GEAR
(84) SYNCHRO SPRING
(85) SYNCHRO RING
(86) DISTANCE COLLAR
(87) 2ND GEAR
(88) 3RD GEAR
(89) 4TH GEAR
(90) 5TH GEAR
(91) BALL BEARING
(92) 23 mm SPRING WASHER
(93) LOCKNUT
110 → 0 → 110 N·m (11.0 → 0 → 11.0 kg-m,
80 → 0 → 80 lb-ft)
(94) 60 mm SNAP RING
(95) 4 x 20 mm SPRING PIN
Replace.
(96) 1ST/2ND SHIFT FORK SHAFT
(97) 1ST/2ND SHIFT FORK

Transmission Housing

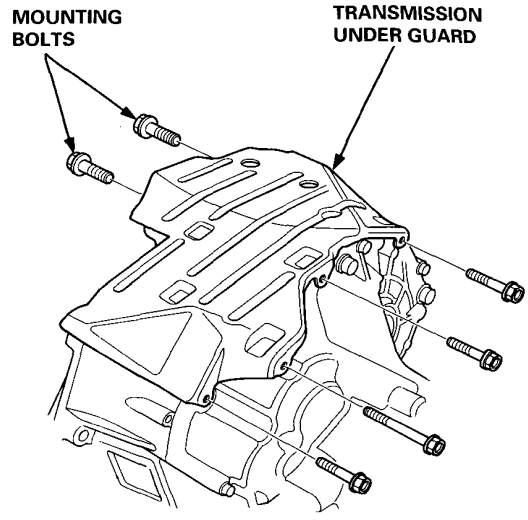
Removal

NOTE: Place the clutch housing on two pieces of wood thick enough to keep the mainshaft from hitting the workbench.

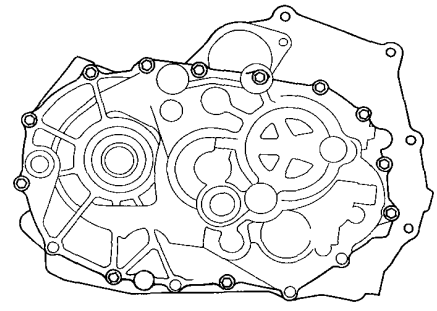
1. Remove the shift arm cover assembly.
2. Remove the parts below as shown.



3. Remove the transmission under guard.

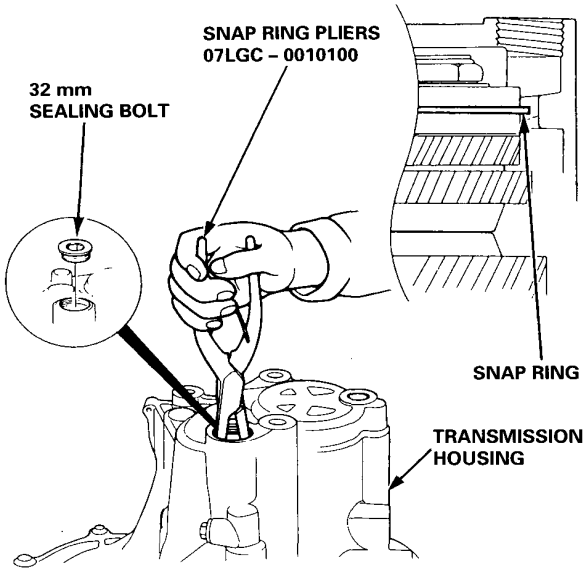


4. Remove the clutch housing mounting bolts in a crisscross pattern in several steps.



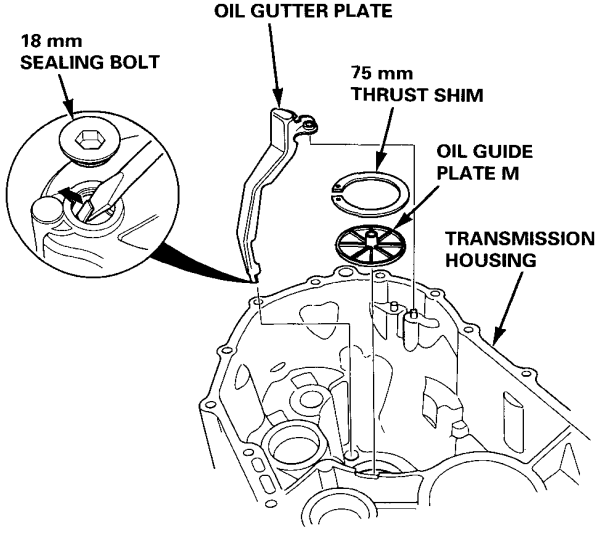
5. Remove the 32 mm sealing bolt.

6. Expand the snap ring on the countershaft ball bearing and remove it from the groove using a pair of snap ring pliers.



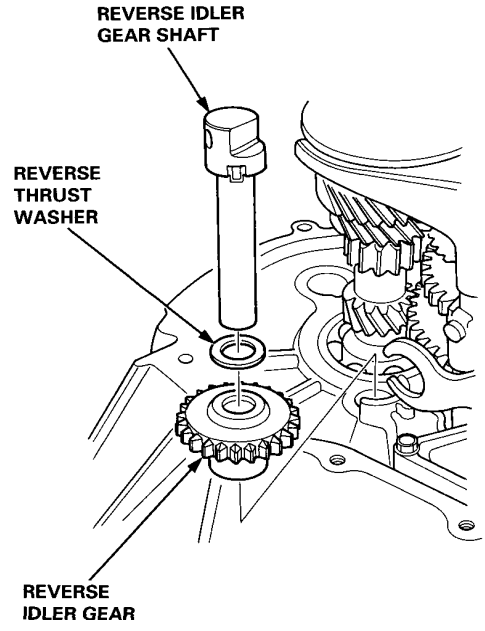
7. Separate the transmission housing from the clutch housing, and wipe it clean of the sealant.

8. Remove the 75 mm thrust shim and oil guide plate M, then remove the 18 mm sealing bolt and oil gutter plate.

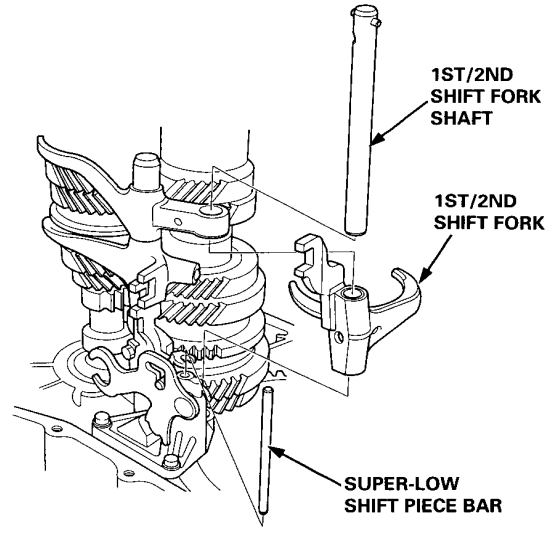


Removal

1. Remove the reverse idler gear shaft, reverse thrust washer, and reverse idler gear.



2. Remove the 1st/2nd shift fork shaft, super-low shift piece bar, and 1st/2nd shift fork.

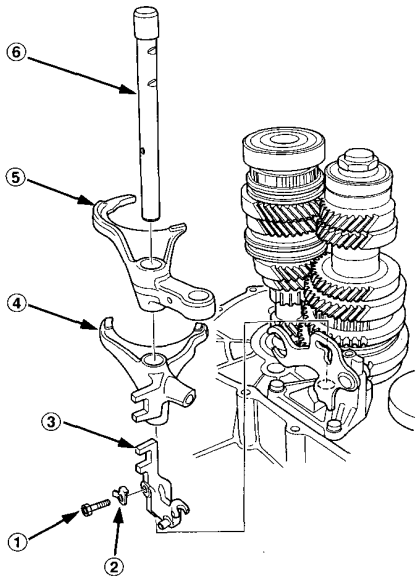


(cont'd)

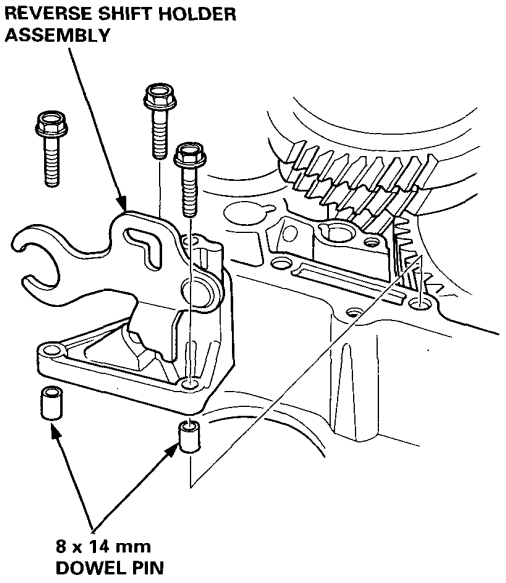
Removal (cont'd)

3. Remove the following parts, in the order shown, from the clutch housing.

① 6 mm SPECIAL BOLT
② LOCK WASHER
③ 5TH/REVERSE SHIFT PIECE
④ 3RD/4TH SHIFT FORK
⑤ 5TH SHIFT FORK
⑥ 5TH/REVERSE SHIFT FORK SHAFT

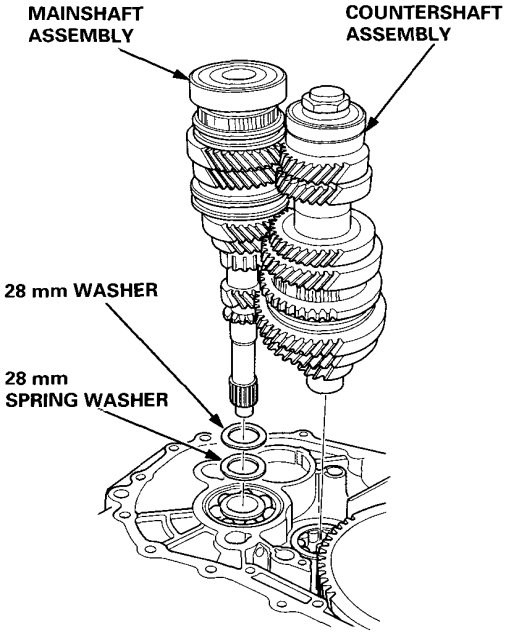


4. Remove the reverse shift holder assembly.

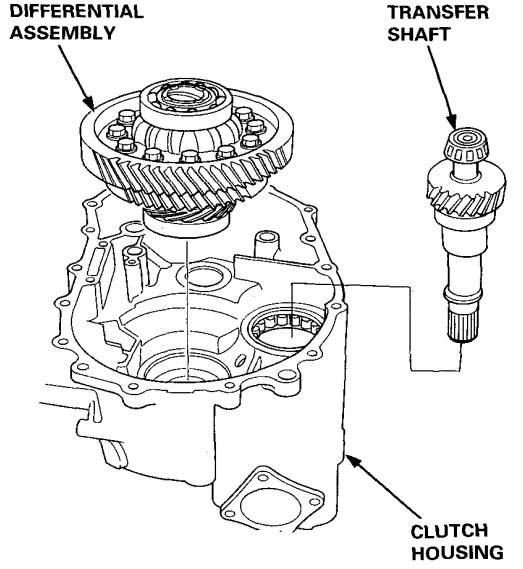


5. Remove the mainshaft and countershaft assemblies, then remove the 28 mm spring washer and 28 mm washer.

NOTE: Before removing the mainshaft and countershaft assemblies, tape the mainshaft splines to protect them.



6. Remove the differential assembly and transfer shaft from the clutch housing.

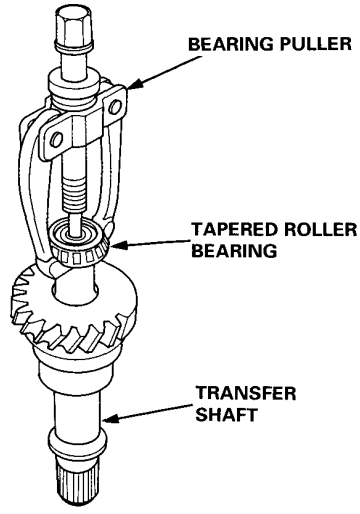


Transfer shaft bearing

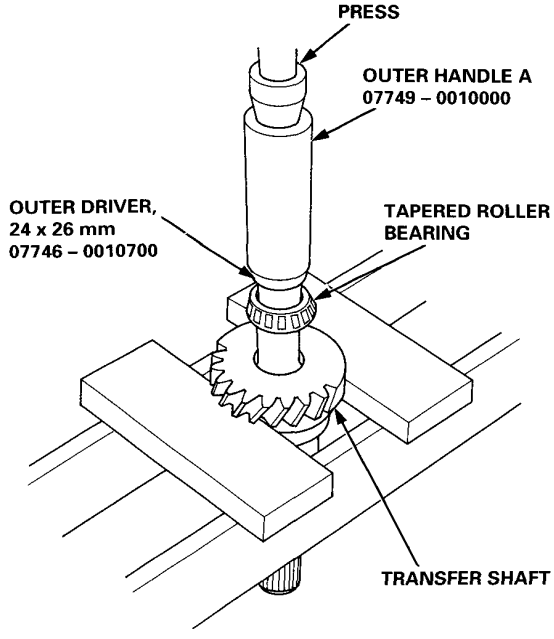
Replacement

NOTE: The tapered roller bearing and bearing outer race should be replaced as a set.

1. Remove the tapered roller bearing from the transfer shaft using the bearing puller.



2. Install the tapered roller bearing using the special tools and a press, as shown.



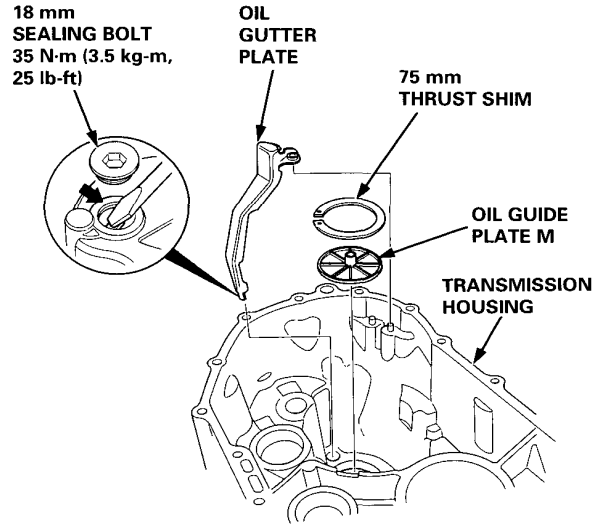
Transmission

Reassembly

1. Install the oil gutter plate and 18 mm sealing bolt.

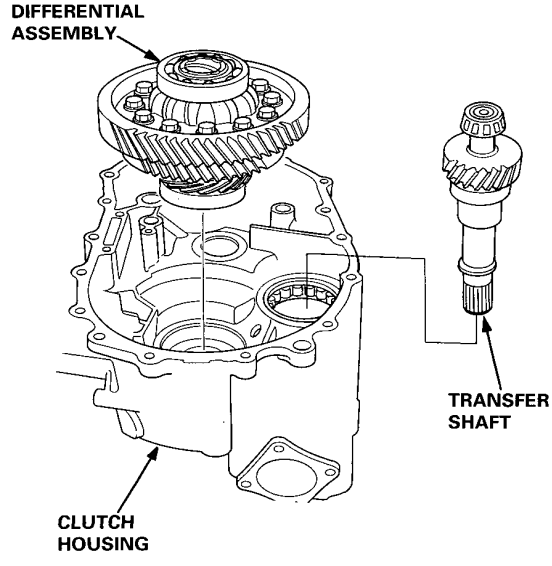
   NOTE: Apply liquid gasket (P/N 0Y740 – 99986) to the threads of the 18 mm sealing bolt.

2. Install the oil guide plate M and 75 mm thrust shim in the transmission housing.



3. Lubricate a tapered roller bearing with gear oil, then install the transfer shaft in the clutch housing.

4. Install the differential assembly in the clutch housing.

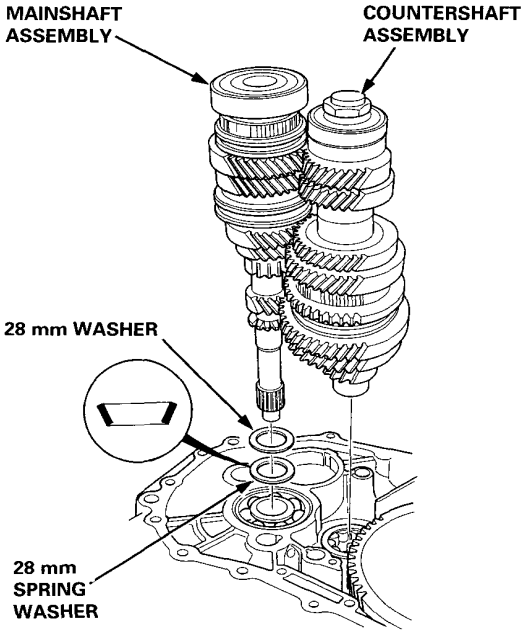


(cont'd)

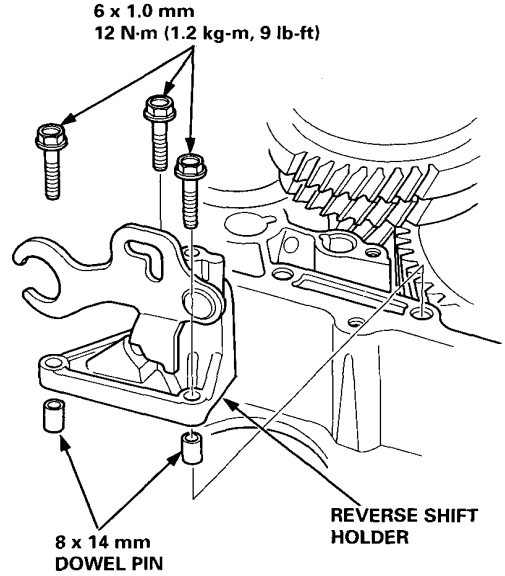
Reassembly (cont'd)

5. Install the 28 mm spring washer and 28 mm washer with the angle against the clutch housing as shown below, then install the mainshaft and countershaft assemblies in the clutch housing.

   NOTE: Before installing the mainshaft and countershaft assemblies, tape the mainshaft splines to protect them.



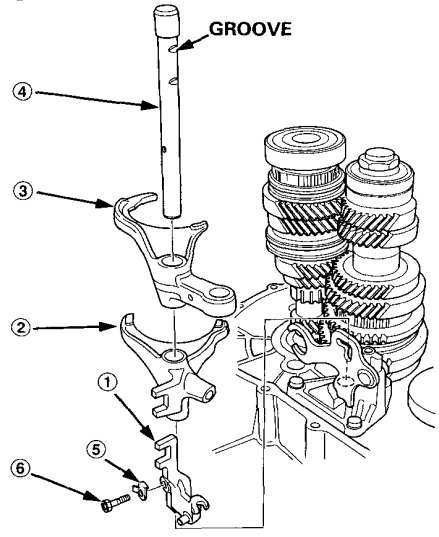
6. Install the 8 x 14 mm dowel pins and reverse shift holder assembly.



7. Install the parts below as shown.

   NOTE: Turn the 5th/reverse shift fork shaft so the groove is facing 1st/2nd shift fork shaft side.

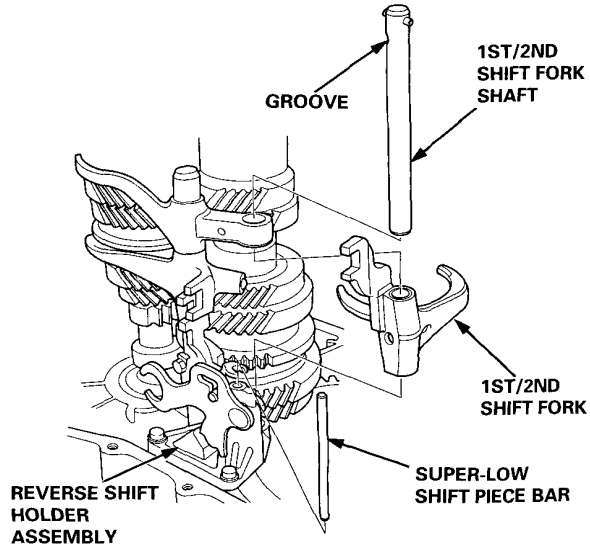
① 5TH/REVERSE SHIFT PIECE
② 3RD/4TH SHIFT FORK
③ 5TH SHIFT FORK
④ 5TH/REVERSE SHIFT FORK SHAFT
⑤ LOCK WASHER
⑥ 6 MM SPECIAL BOLT



8. Install the 1st/2nd shift fork on the countershaft, then install 1st/2nd shift fork shaft.

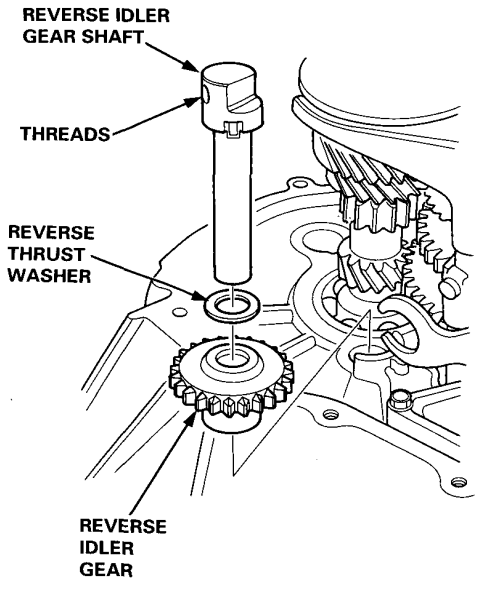
   NOTE: Turn the 1st/2nd shift fork shaft so the groove is facing 5th/reverse shift fork shaft side.

9. Install the super-low shift piece bar on the reverse shift holder assembly.



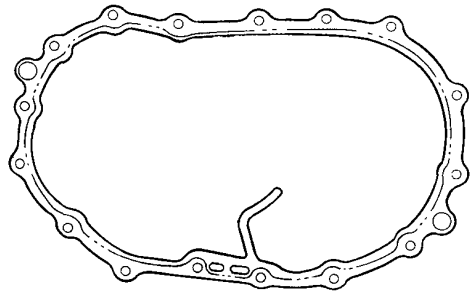
10. Install the reverse idler gear, reverse thrust washer, and reverse idler gear shaft.

    NOTE: Turn the reverse idler gear shaft so the threads is facing outside.



11. Apply liquid gasket to the surface on the transmission housing as shown.

    NOTE:
    - Use liquid gasket (P/N 0Y740 – 99986).
    - Remove the dirty oil from the sealing surface.
    - If 20 minutes have passed after applying liquid gasket, reapply it and assemble the housings. Allow it to cure at least 30 minutes after assembly before filling the transmission with oil.



12. Install the 14 x 20 mm dowel pins.

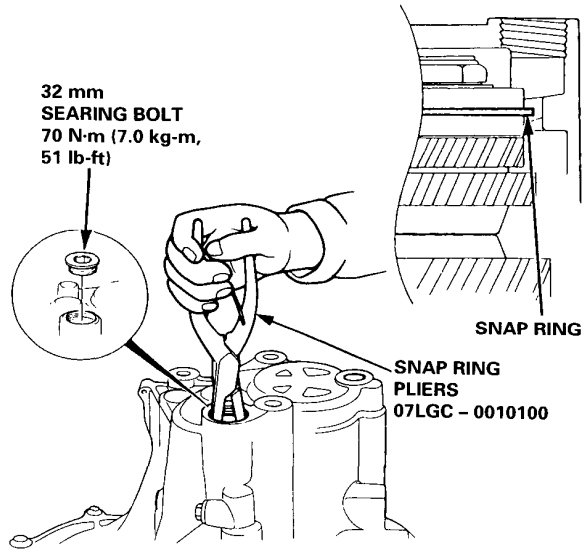
13. Lower the transmission housing with the snap ring pliers and set the snap ring into the groove of the countershaft bearing.

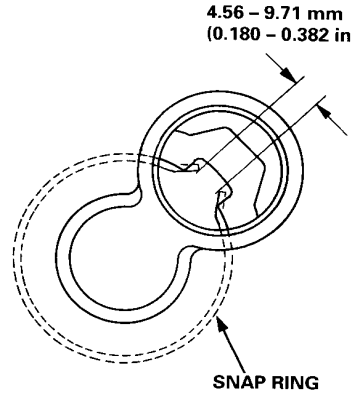
14. Check that the snap ring is securely seated in the groove of the countershaft bearing.

    Dimension A as installed: 4.56 – 9.71 mm (0.180 – 0.382 in)

15. Install the 32 mm sealing bolt.

    NOTE: Apply liquid gasket (P/N 0Y740 – 99986) to the threads.



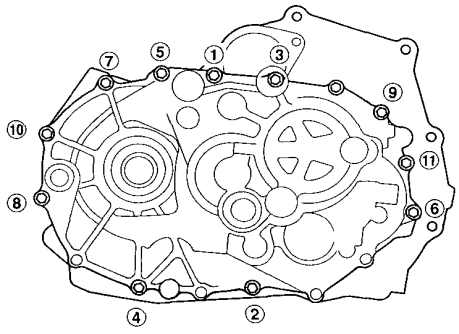


(cont'd)

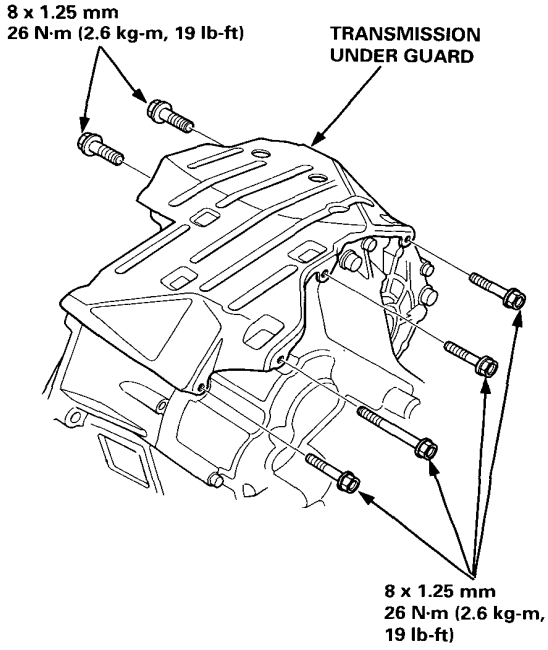
Reassembly (cont'd)

16. Torque the bolts in a crisscross pattern in several steps as shown.

8 x 1.25 mm
26 N·m (2.6 kg-m,19 lb-ft)

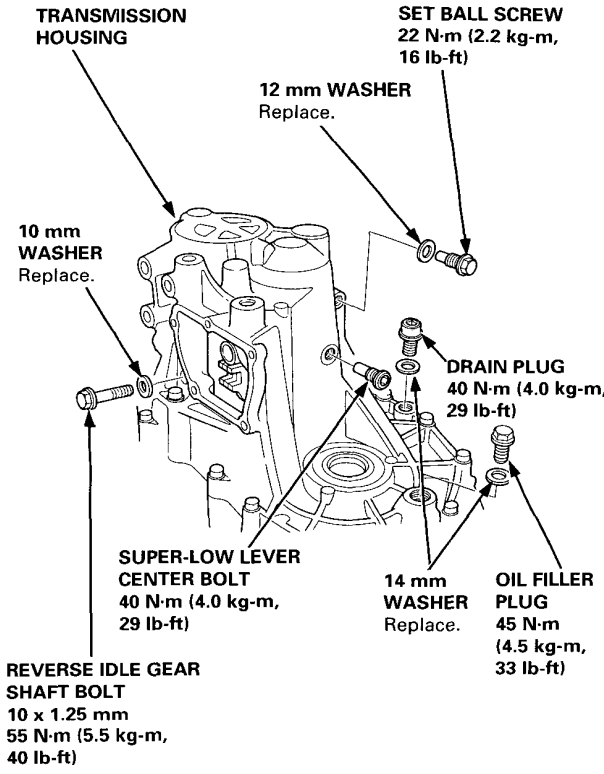


17. Install the transmission under guard and mounting bolts.



18. Install the parts below as shown.

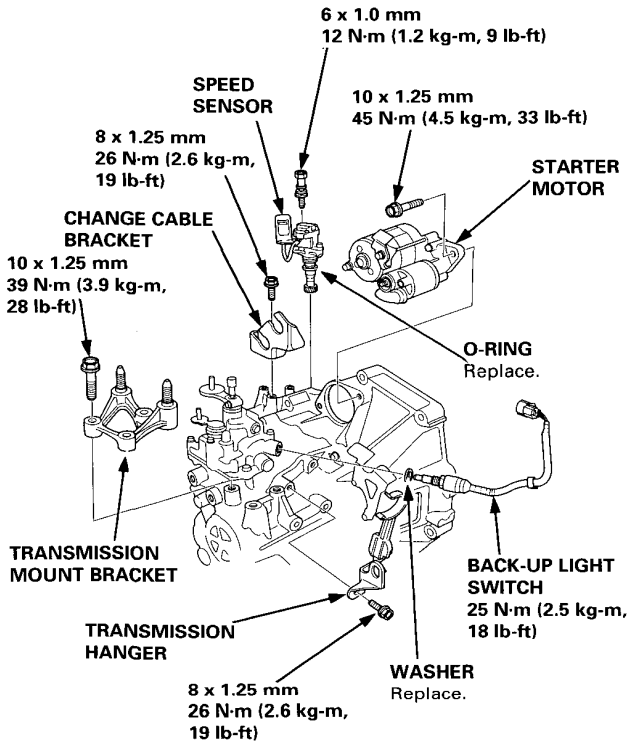
NOTE: Apply liquid gasket (P/N 0Y740 – 99986) to the threads of the super-low lever center bolt.



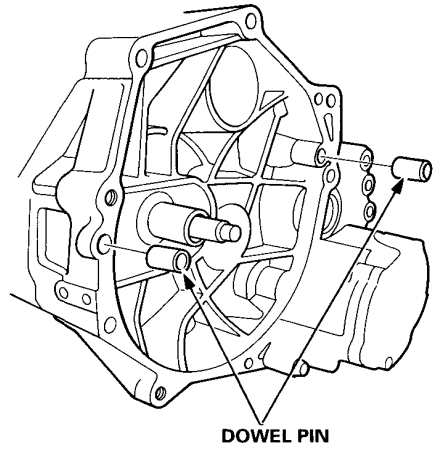
19. Install the shift arm cover assembly.

Installation

1. Install the parts below as shown.



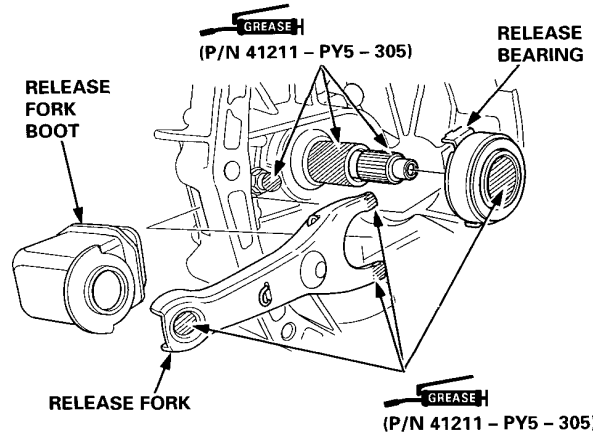
2. Install the dowel pins on the clutch housing.



3. Apply grease to the parts as shown, then install the release fork and release bearing.

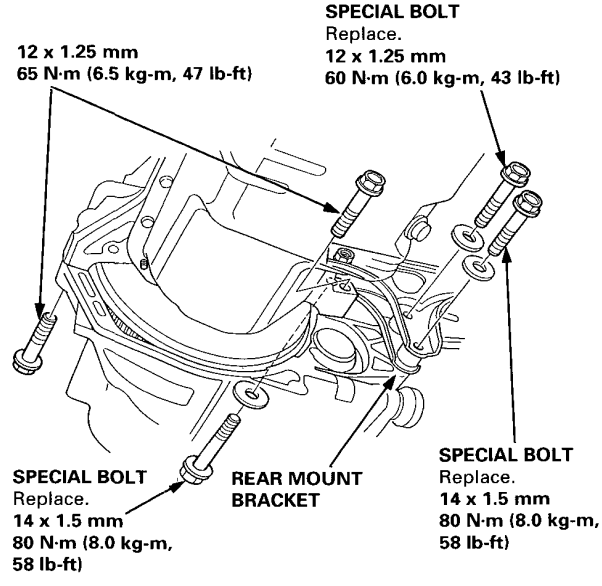
   NOTE: Use only HONDA Genuine Urea Grease UM264 (P/N 41211 – PY5 – 305).

4. Install the release fork boot.



5. Place the transmission on the transmission jack, and raise it to the engine level.

6. Install the transmission mounting bolts and the rear mount bracket bolts.



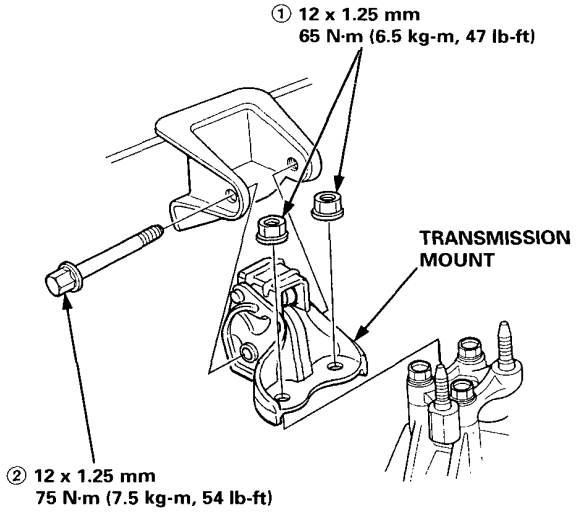
(cont'd)

Installation (cont'd)

7. Raise the transmission, then install the transmission mount.

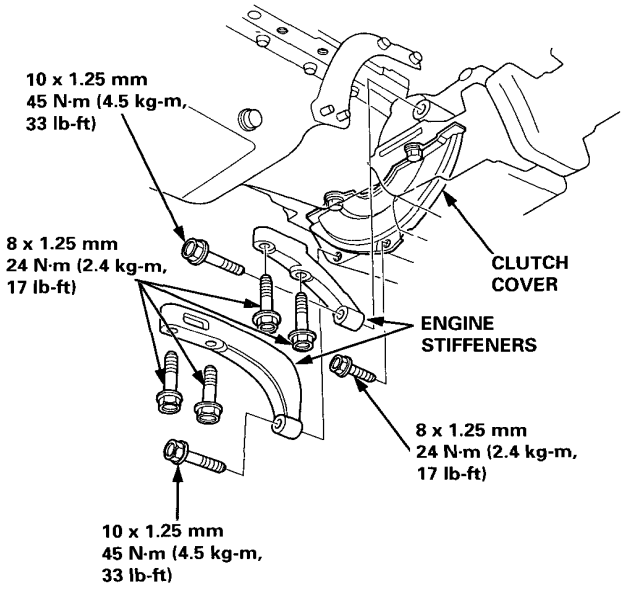
   NOTE: Torque the mounting bolt and nuts in sequence shown.

   CAUTION: Check that the bushings are not twisted or offset.



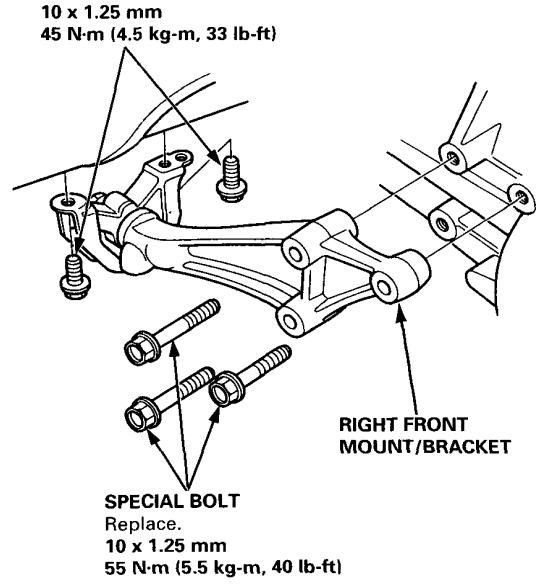
8. Install the clutch cover mounting bolt.

9. Install the front and rear engine stiffereners.

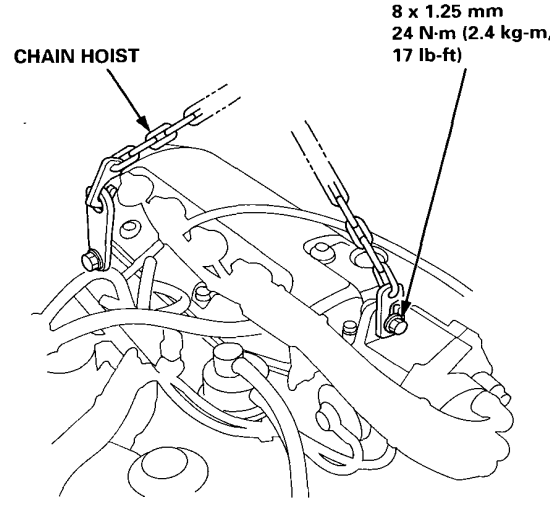

10 x 1.25 mm
45 N·m (4.5 kg-m, 33 lb-ft)
8 x 1.25 mm
24 N·m (2.4 kg-m, 17 lb-ft)
CLUTCH COVER
ENGINE STIFFENERS
8 x 1.25 mm
24 N·m (2.4 kg-m, 17 lb-ft)
10 x 1.25 mm
45 N·m (4.5 kg-m, 33 lb-ft)

10. Install the right front mount/bracket.

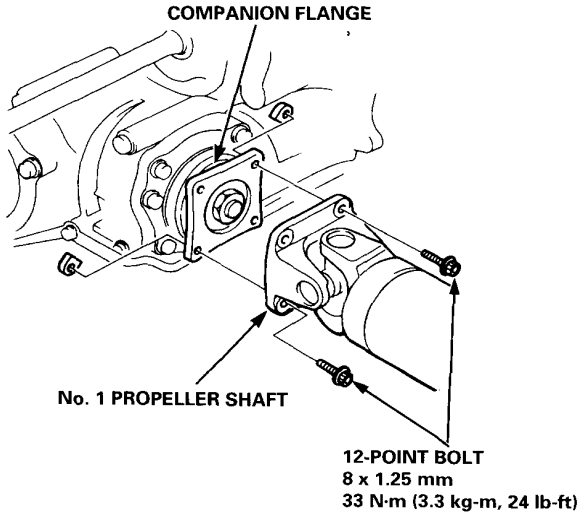
11. Install the engine splash shield.



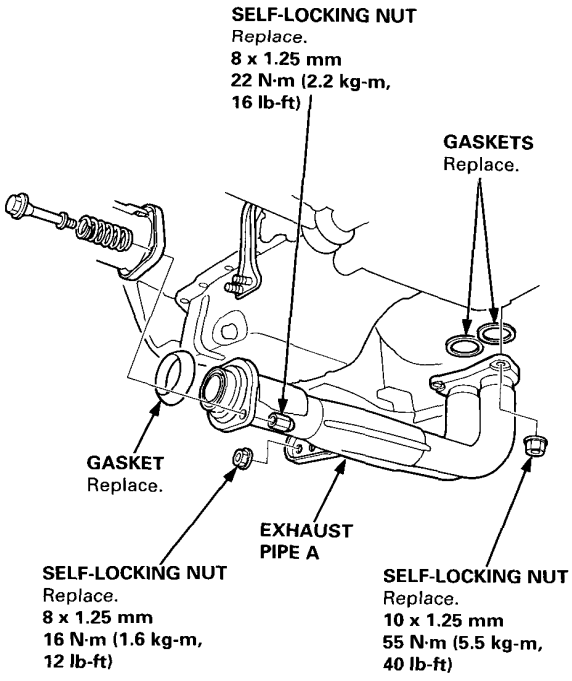
12. Remove the chain hoist, then install the distributor mounting bolt.



13. Align the marks, then connect the No. 1 propeller shaft and companion flange (see section 16).

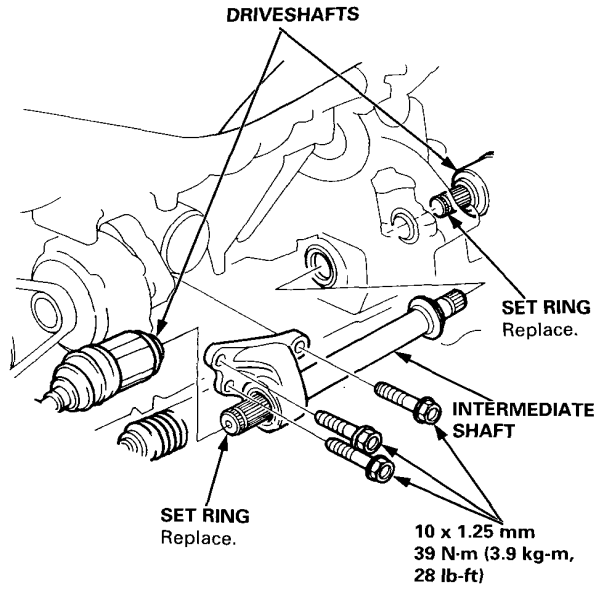


14. Install exhaust pipe A.



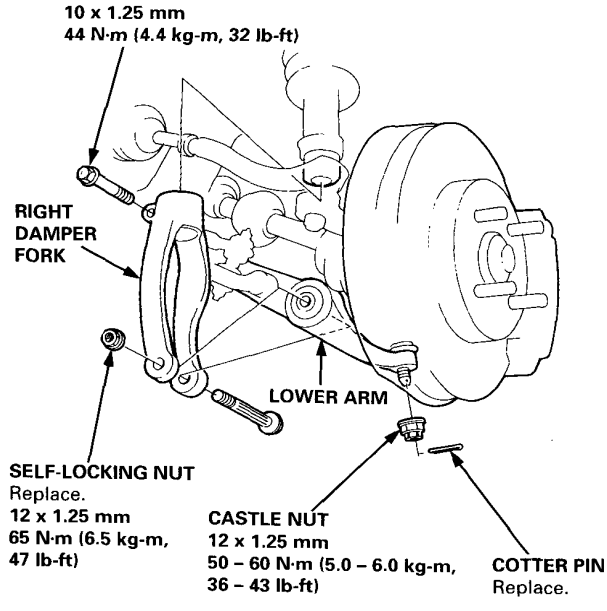
15. Install the intermediate shaft and the driveshafts (see section 16).

NOTE: Replace the set rings with new ones.



16. Install the ball joints onto the lower arm (see section 18).

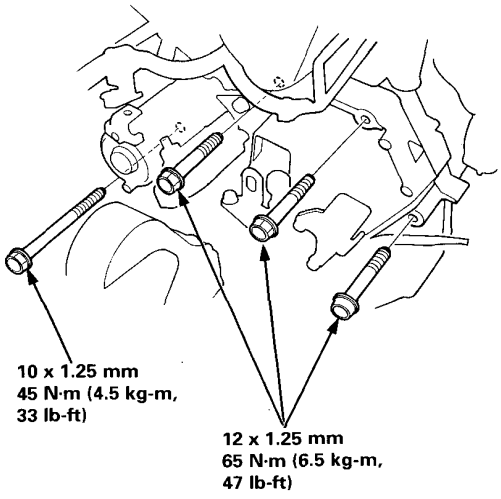
17. Install the right damper fork (see section 18).



(cont'd)

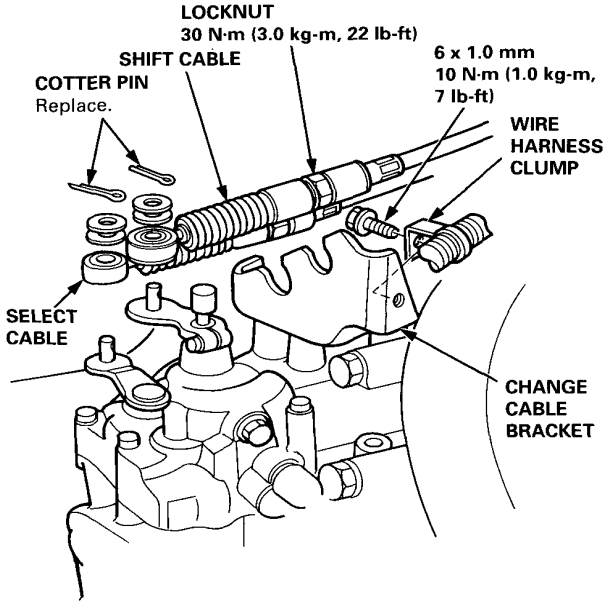
Installation (cont'd)

18. Install the three transmission mounting bolts and starter motor mounting bolt.



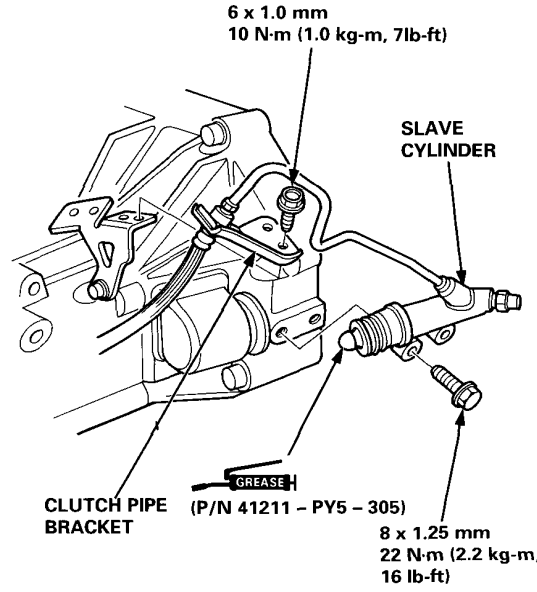
19. Install the wire harness clump to the change cable bracket.

20. Connect the shift and select cables, then install the cotter pins.



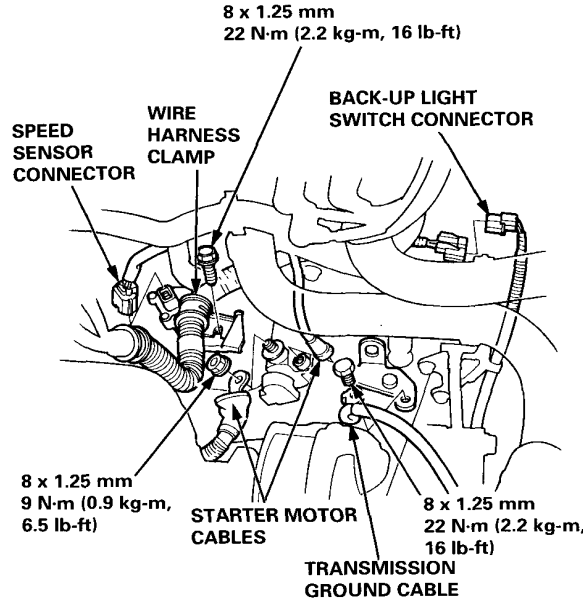
21. Install the slave cylinder, then install the clutch pipe bracket.

NOTE: Use only HONDA Genuine Urea Grease UM264 (P/N 41211 – PY5 – 305).

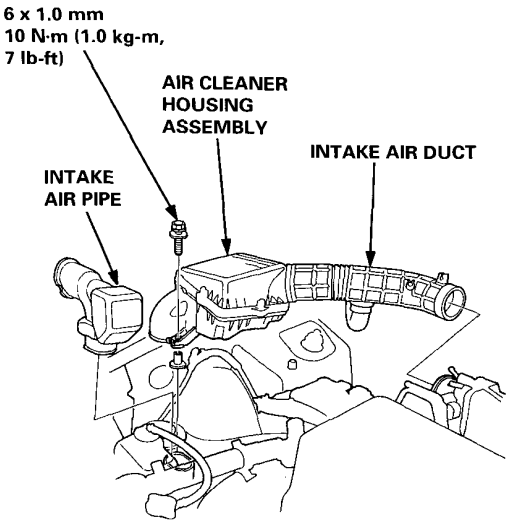


22. Connect the speed sensor connector, the starter motor cables, the back-up light switch connector, and the transmission ground cable.

23. Install the wire harness clamp.



24. Install the air cleaner housing assembly, intake air duct, and intake air pipe.



25. Refill the transmission with oil.

26. Connect the positive (+) cable first, then the negative (–) cable to the battery.

27. Check the clutch operation.

28. Shift the transmission and check for smooth operation.

29. Adjust the ignition timing (see section 23).

30. Check the front wheel alignment (see section 18).

SUPPLEMENTAL RESTRAINT SYSTEM (SRS)
(If automatic transmission maintenance is required)

Some model versions of the Civic include a driver's airbag, located in the steering wheel hub. In addition, the KB model has a front passenger's airbag located in the dashboard above the glove box. There are two types of SRS: Type II (SRS unit is part of the airbag assembly), which is used for models without front passenger's airbag (all except KB model), and Type III (SRS unit is not part of the airbag assembly, and has built-in sensors), which is used for models with front passenger's airbag (KB model). Information necessary to safely service the SRS is included in this Shop Manual. Items marked with an asterisk (*) on the contents page include, or are located near, SRS components. Servicing, disassembling or replacing these items will require special precautions and tools, and should therefore be done by an authorized Honda dealer.

⚠ WARNING

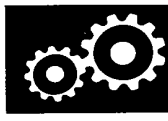
- **To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal collision, all SRS service work must be performed by an authorized Honda dealer.**
- **Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional activation of the airbags.**
- **Do not bump the SRS unit. Otherwise, the system may fail in case of a collision, or the airbags may deploy when the ignition switch is ON (II) (SRS Type III).**
- **All SRS electrical wiring harnesses are covered with yellow insulation. Related components are located in the steering column, front console, dashboard, dashboard lower panel, and, in case of the KB model, in the dashboard above the glove box. Do not use electrical test equipment on these circuits.**
- **Service work nearby and in the areas listed below may affect the SRS and must therefore be performed by an authorized Honda dealer.**

SRS Type II:
- Steering wheel (Be careful not to bump the steering wheel as the SRS unit (sensors), inflator, etc. are located in it.)
- Behind the dashboard
- Under-dash fuse/relay box

SRS Type III:
- Steering wheel
- Behind the dashboard
- Under-dash fuse/relay box
- Front console
- Car stereo units and other accessories
- A/C heater

Automatic Transmission

2WD Automatic Transmission
M24A 14-1
4WD Automatic Transmission 14-33



Outline of Model Changes

- M24A automatic transmission has been changed.
- 4WD automatic transmission has been modified.

2WD Automatic Transmission M24A

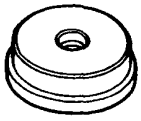
Special Tools 14-2
Description
  Hydraulic Circuit 14-3
Hydraulic System
  Symptom-to-Component Chart 14-4
Illustrated Index
  Right Side Cover 14-8
  Transmission Housing 14-10
  Torque Converter Housing/Valve Body 14-12
Secondary Valve Body
  Disassembly/Inspection/Reassembly 14-14
Servo Body
  Disassembly/Inspection/Reassembly 14-16
Countershaft
  Disassembly/Inspection/Reassembly 14-18
  Disassembly/Reassembly 14-19
  Inspection 14-20
Sub-shaft
  Disassembly/Inspection/Reassembly 14-23
  Disassembly/Reassembly 14-24
Clutch
  Illustrated Index 14-25
Reverse Idler Gear
  Installation 14-28
*Shift Indicator Panel (KB model)
  Adjustment 14-29
*Shift Cable (KB model)
  Removal/Installation 14-30
  Adjustment 14-31
*Gearshift Selector (KB model)
  Disassembly/Reassembly 14-32

Outline of Model Changes

- Hydraulic circuit has been modified.
- The following parts of the automatic transmission have been changed;
  - — Parking gear
  - — Reverse idler gear shaft and holder
  - — Oil guide cap of the sub-shaft
  - — Secondary valve body
  - — Servo body
  - — Countershaft
  - — Clutch assemblies
  - — Supplemental Restraint System (SRS)-Type III has been added on KB model.

Special Tools

Ref. No.	Tool Number	Description	Qty	Page Reference
①	07746—0010100	Attachment, 32 x 35 mm	1	14-24
②	07746—0030100	Driver, 40 mm I.D.	1	14-20
③	07749—0010000	Driver	1	14-24



①

②

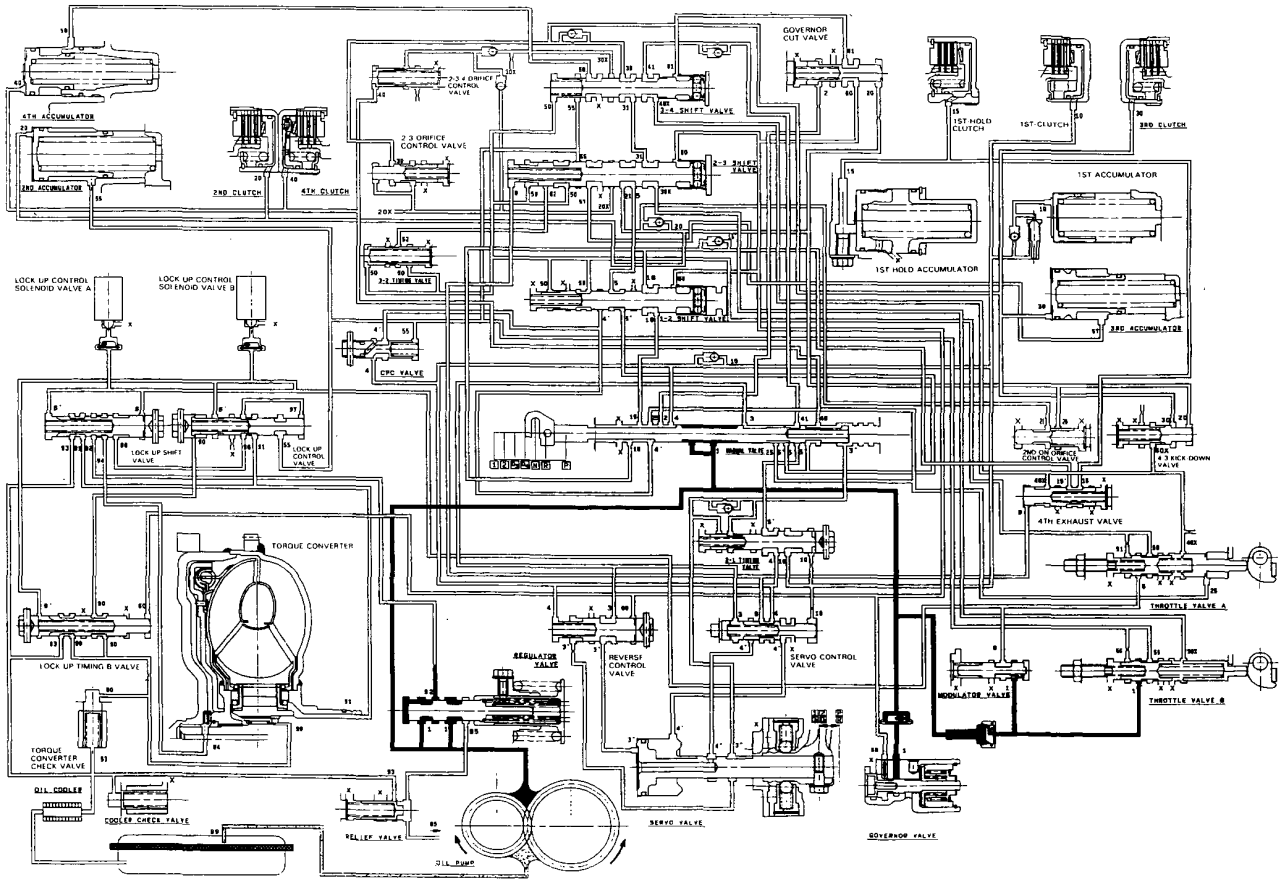
③

Description

Hydraulic Circuit

The hydraulic circuit has been modified due to the secondary valve body modification.

No.	DESCRIPTION OF PRESSURE	No.	DESCRIPTION OF PRESSURE	No.	DESCRIPTION OF PRESSURE
1	LINE	16	1ST-HOLD CLUTCH	57	THROTTLE B
2	LINE	18	LINE	58	THROTTLE B
3	LINE	20	2ND CLUTCH	60	GOVERNOR
3'	LINE	21	2ND CLUTCH	61	GOVERNOR
3''	LINE	25	LINE	90	TORQUE CONVERTER
4	LINE	30	3RD CLUTCH	91	TORQUE CONVERTER
4'	LINE	31	3RD CLUTCH	92	TORQUE CONVERTER
5	LINE	40	4TH CLUTCH	93	OIL COOLER
5'	LINE	41	4TH CLUTCH	94	TORQUE CONVERTER
5''	LINE	50	THROTTLE A	95	LUBRICATION
6	MODULATOR	51	THROTTLE A	96	TORQUE CONVERTER
6'	MODULATOR	52	THROTTLE A	97	TORQUE CONVERTER
10	1ST CLUTCH	55	THROTTLE B	99	SUCTION
15	1ST-HOLD CLUTCH	56	THROTTLE B	x	BLEED



Symptom-to-Component Chart

SYMPTOM	Check these items on the PROBABLE CAUSE LIST	Check these items on the NOTES CHART
Engine runs, but car does not move in any gear.	1, 6, 7, 16	K, L, R, S
Car moves in [R] and [2], but not in [D3], [D4] or [1].	8, 29, 44, 48	C, M, O
Car moves in [D3], [D4], [1], [R], but not in [2].	9, 30, 49	C, L
Car moves in [D3], [D4], [2], [1], but not in [R].	1, 11, 22, 34, 38, 39, 40	C, L, Q
Car moves in [N].	1, 8, 9, 10, 11, 46, 47	C, D
Excessive idle vibration.	5, 17	B, K, L
Slips in all gears.	6, 7, 16	C, L, U
No engine braking in [1] position.	12	C, D, L
Slips in 1st gear.	8, 29, 44, 48	C, N, O, U
Slips in 2nd gear.	9, 20, 23, 30, 49	C, L, U
Slips in 3rd gear.	10, 21, 23, 31, 44	C, L, U
Slips in 4th gear.	11, 23, 32	C, L, U
Slips in reverse gear.	11, 32, 34	C
Flares on 1—2 upshift.	3, 15	E, L, V
Flares on 2—3 upshift.	3, 15, 24, 44	E, L, V
Flares on 3—4 upshift.	3, 15, 25, 44	E, L, V
No upshift, transmission stays in low gear.	14, 19, 23	G, L
No downshift to low gear.	12, 19	G, L
Late upshift.	14	L, V
Erratic shifting.	2, 14	V
Harsh shift (up and down shifting).	2, 4, 15, 23, 24, 27, 47	A, E, H, I, L, V
Harsh shift (1—2).	2, 9	C, D, V
Harsh shift (2—3).	2, 10, 23, 24	C, D, H, L, V
Harsh shift (3—4).	2, 11, 23, 25	C, D, I, L, V
Harsh kick-down shifts.	2, 23, 27, 28	L, V, Q
Harsh kick-down shift (2—1).	48	O
Harsh downshift at closed throttle.	15	E, T
Harsh shift when manually shifting to [1].	33	L
Axle(s) slips out of transmission on turns.	43, 50	L, P, Q
Axle(s) stuck in transmission.	43	L, Q
Ratcheting noise when shifting into [R].	6, 7, 38, 39, 40	K, L, Q
Loud popping noise when taking off in [R].	38, 39, 40	L, Q
Ratcheting noise when shifting from [R] to [P] or from [R] to [N].	38, 39, 40, 45	L, Q
Noise from transmission in all selector lever positions.	6, 17	K, L, Q
Noise from transmission only when wheels are rolling.	39, 42	L, Q
Gear whine, rpm related (pitch changes with shifts).	8, 41	K, L, Q
Gear whine, speed related (pitch changes with speed).	38, 42	L, Q
Transmission will not shift into 4th gear in [D4].	1, 21, 28, 32	L
Lock-up clutch does not lock-up smoothly.	17, 36, 37	L
Lock-up clutch does not operate properly.	2, 3, 15, 18, 35, 36, 37	E, L, V
Transmission has multitude of problems shifting. At disassembly, large particles of metal are found on magnet.	43	L,Q

	PROBABLE CAUSE
1.	Shift cable broken/out of adjustment.
2.	Throttle cable too short.
3.	Throttle cable too long.
4.	Wrong type ATF.
5.	Idle rpm too low/high.
6.	Oil pump worn or binding.
7.	Rgulator valve stuck.
8.	1st clutch defective.
9.	2nd clutch defective.
10.	3rd clutch defective.
11.	4th clutch defective.
12.	1st-hold clutch defective.
14.	Modulator valve stuck.
15.	Throttle valve B stuck.
16.	ATF strainer clogged.
17.	Torque converter defective.
18.	Torque converter check valve stuck.
19.	1—2 shift valve stuck.
20.	2—3 shift valve stuck.
21.	3—4 shift valve stuck.
22.	Servo control valve stuck.
23.	Clutch pressure control (CPC) valve stuck.
24.	2—3 orifice control valve stuck.
25.	2/3-4 orifice control valve stuck.
26.	2nd ON orifice control valve stuck.
27.	4—3 kick-down valve stuck.
28.	4th exhaust valve stuck.
29.	1st accumulator defective.
30.	2nd accumulator defective.
31.	3rd accumulator defective.
32.	4th/reverse accumulator defective.
33.	1st-hold accumulator defective.
34.	Servo valve stuck.
35.	Lock-up timing valve stuck.
36.	Lock-up shift valve stuck.
37.	Lock-up control valve stuck.
38.	Shift fork bent.
39.	Reverse gears worn/damaged (3 gears).
40.	Reverse selector worn.
41.	3rd gears worn/damaged (2 gears).
42.	Final gears worn/damaged (2 gears).
43.	Differential pinion shaft worn.
44.	Feedpipe O-ring broken.
45.	4th gears worn/damaged (2 gears).
46.	Gear clearance incorrect.
47.	Clutch clearance incorrect.
48.	One-way (sprag) clutch defective.
49.	Sealing rings/guide worn.
50.	Axle-inboard joint clip missing.

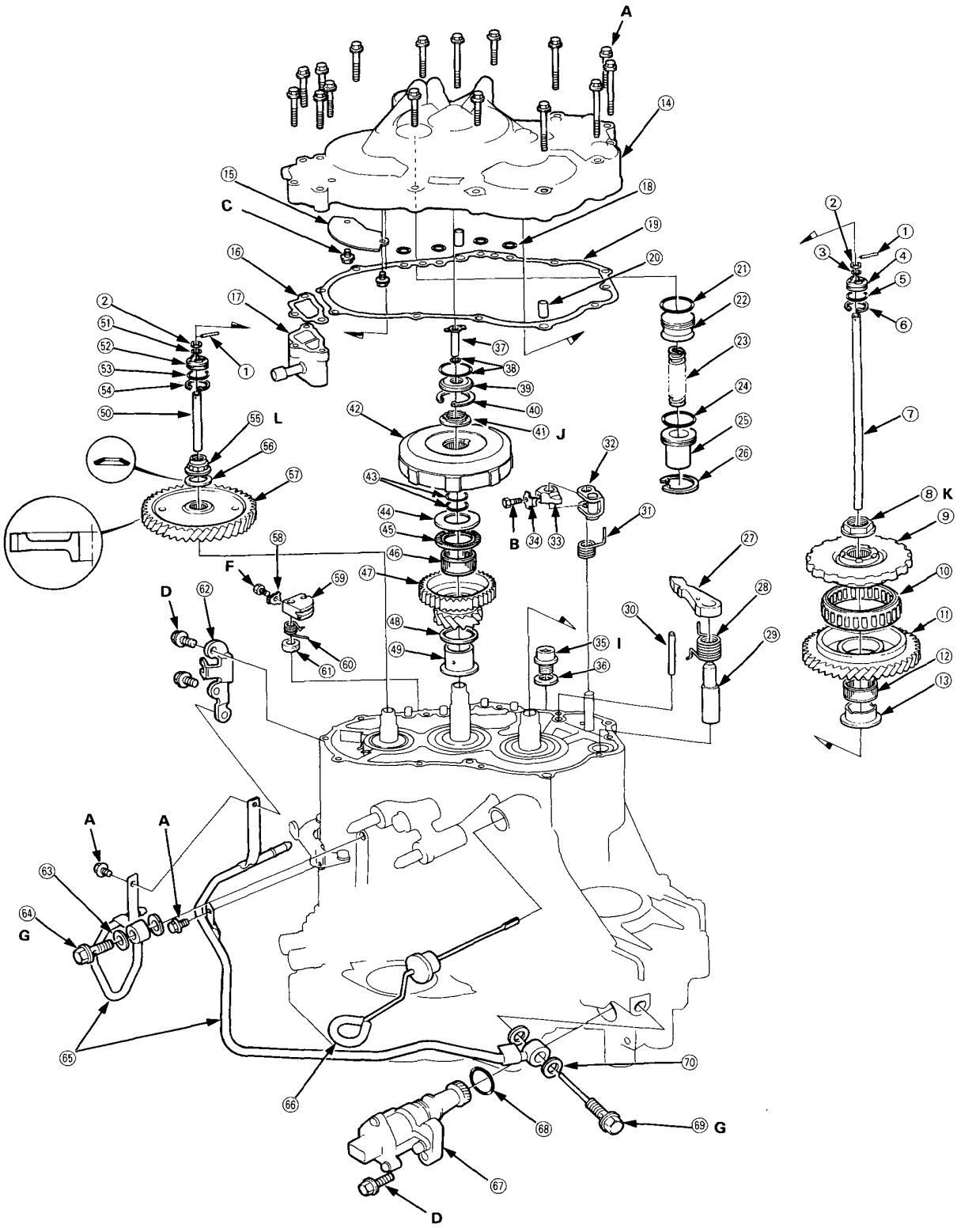
(cont'd)

Symptom-to-Component Chart (cont'd)

The following symptoms can be caused by improper repair or assembly.	Check these items on the PROBABLE CAUSE DUE TO IMPROPER REPAIR	Items on the NOTES CHART
Car creeps in [N].	R1, R2	
Car does not move in [D3] or [D4].	R4	
Transmission locks up in [R].	R3, R12	
Excessive drag in transmission.	R6	K, R
Excessive vibration, rpm related.	R7	
Noise with wheels moving only.	R5	
Main seal pops out.	R8	S
Various shifting problems.	R9, R10	
Harsh upshifts.	R11	

PROBABLE CAUSE DUE TO IMPROPER REPAIR	
R1.	Improper clutch clearance.
R2.	Improper gear clearance.
R3.	Parking brake lever installed upside down.
R4.	One-way (sprag) clutch installed upside down.
R5.	Reverse selector hub installed upside down.
R6.	Oil pump binding.
R7.	Torque converter not fully seated in oil pump.
R8.	Main seal improperly installed.
R9.	Springs improperly installed.
R10.	Valves improperly installed.
R11.	Ball check valves not installed.
R12.	Shift fork bolt not installed.

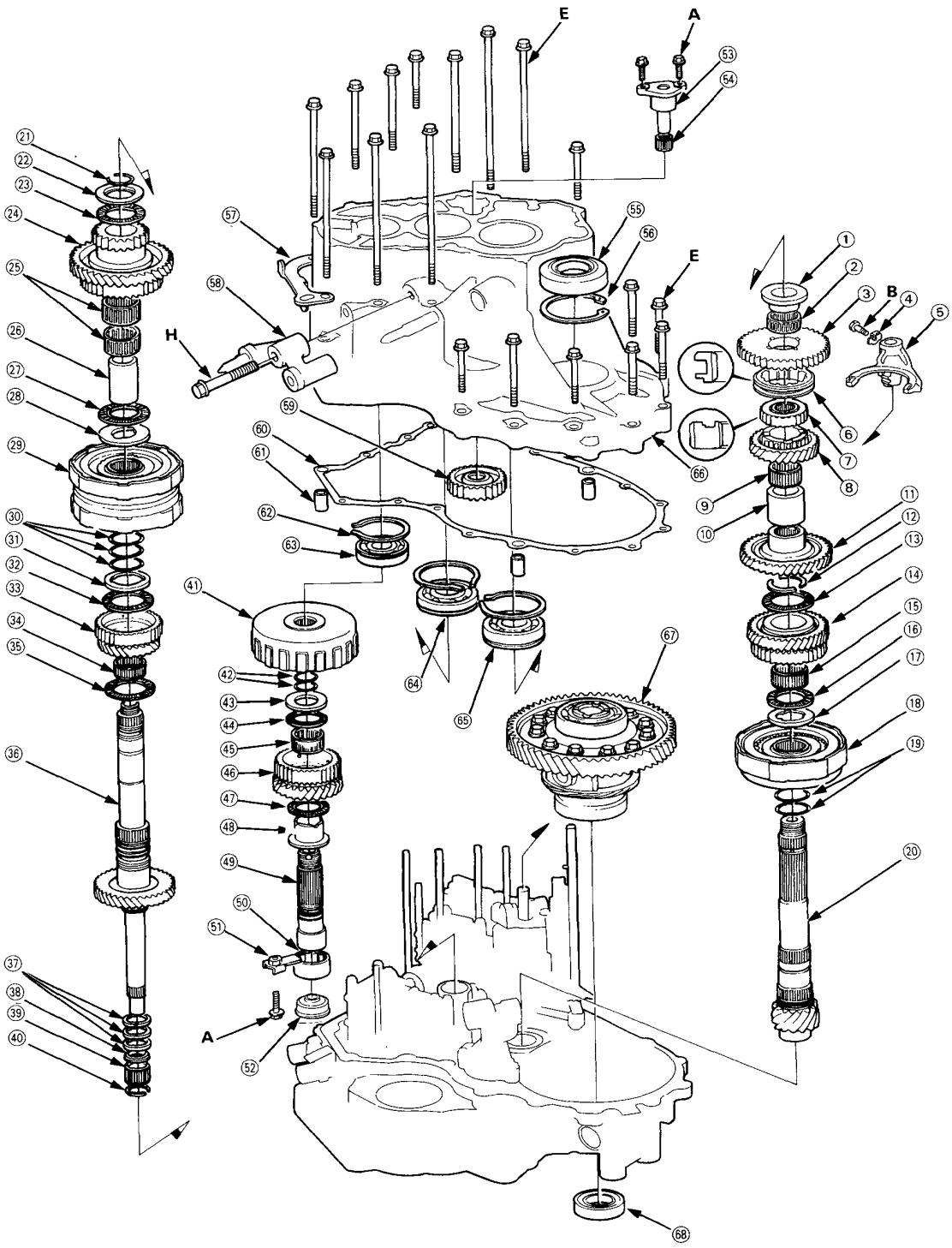
NOTES	
B.	Set idle rpm in gear to specified idle speed. If still no good, adjust motor mounts as outlined in engine section of service manual.
C.	If the large clutch piston O-ring is broken, inspect the piston groove for rough machining.
D.	If the clutch pack is seized or is excessively worn, inspect the other clutches for wear and check the *orifice control valves and throttle valves for free movement.*
E.	If throttle valve B is stuck, inspect the clutches for wear.
G.	If the 1—2 shift valve is stuck closed, the transmission will not upshift. If stuck open, the transmission has no 1st gear.
H.	If the 2—3 orifice control valve is stuck, inspect the 2nd and 3rd clutch packs for wear.
I.	If the 2/3-4 orifice control valve is stuck, inspect the 3rd and 4th clutch packs for wear.
J.	If the clutch pressure control valve (CPC) is stuck closed, the transmission will not shift out of 1st gear.
K.	Improper alignment of main valve body and torque converter housing may cause oil pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeek.
L.	If the ATF strainer is clogged with particles of steel or aluminum, inspect the oil pump and differential pinion shaft. If both are OK and no cause for the contamination is found, replace the torque converter.
M.	If the 1st clutch feedpipe guide in the R. side cover is scored by the mainshaft, inspect the ball bearing for excessive movement in the transmission housing. If OK, replace the R. side cover as it is dented. The O-ring under the guide is probably worn.
N.	Replace the mainshaft if the bushings for the 1st and 4th feedpipe are loose or damaged. If the 1st feedpipe is damaged or out of round, replace it. If the 4th feedpipe is damaged or out of round, replace the right side cover.
O.	A worn or damaged one-way (sprag) clutch is mostly a result of shifting the transmission in [D3] or [D4] while the wheels rotate in reverse, such as rocking the car in snow.
P.	Inspect the frame for collision damage.
Q.	Inspect for damage or wear: 1. Reverse selector gear teeth chamfers. 2. Engagement teeth chamfers of countershaft 4th and reverse gear. 3. Shift fork for scuff marks in center. 4. Differential pinion shaft for wear under pinion gears. 5. Bottom of 3rd clutch for swirl marks. Replace items 1, 2, and 4 if worn or damaged. If transmission makes clicking, grinding or whirring noise, also replace mainshaft 4th gear and reverse idler gear and countershaft 4th gear in addition to 1, 2, 3 or 4. If differential pinion shaft is worn, overhaul differential assembly and replace ATF strainer and thoroughly clean transmission, flush torque converter, cooler and lines. If bottom of 3rd clutch is swirled and transmission makes gear noise, replace the countershaft and ring gear.
R.	Be very careful not to damage the torque converter housing when replacing the main ball bearing. You may also damage the oil pump when you torque down the main valve body. *This will result in oil pump* seizure if not detected. Use proper tools.
S.	Install the main seal flush with the torque converter housing. If you push it into the torque converter housing until it bottoms out, it will block the oil return passage and result in damage.
T.	Harsh downshifts when coasting to a stop with zero throttle may be caused by a bent-in throttle valve retainer/cam stopper. Throttle cable adjustment may clear this problem.
U.	Check if separator plate is installed. If it was not installed, the servo valve may have been pushed out by hydraulic pressure causing a leak (internal) affecting all forward gears.
V.	Throttle cable adjustment is essential for proper operation of the transmission. Not only does it affect the shift points if misadjusted, but also the shift quality and lock-up clutch operation. A cable adjusted too long will result in throttle pressure being too low for the amount of engine torque input into the transmission and may cause clutch slippage. A cable adjusted too short will result in too high throttle pressures which may cause harsh shifts, erratic shifts and torque converter hunting.


A
14
15
C
18
19
16
20
17
21
22
2
51
52
53
54
50
1
37
38
39
40
41
J
23
24
25
26
55
L
56
57
42
43
44
45
46
47
48
49
32
31
B
34
33
58
F
59
60
61
62
D
27
28
29
30
35
I
36
2
1
3
4
5
6
7
8
K
9
10
11
12
13
A
A
63
64
G
65
66
68
70
69
G
67
D

① ROLLER
② COLLAR
③ O-RING Replace.
④ FEED PIPE FLANGE
⑤ O-RING Replace.
⑥ CIRCLIP
⑦ 3RD CLUTCH FEED PIPE
⑧ COUNTERSHAFT LOCKNUT (FLANGE NUT) Replace.
⑨ PARKING GEAR
⑩ ONE-WAY CLUTCH ASSEMBLY
⑪ COUNTERSHAFT 1ST GEAR
⑫ NEEDLE BEARING
⑬ COUNTERSHAFT 1ST GEAR COLLAR
⑭ RIGHT SIDE COVER
⑮ BREATHER COVER
⑯ BREATHER CHAMBER GASKET Replace.
⑰ BREATHER CHAMBER
⑱ O-RINGS Replace.
⑲ RIGHT SIDE COVER GASKET Replace.
⑳ DOWEL PINS
㉑ O-RING Replace.
㉒ 1ST-HOLD ACCUMULATOR PISTON
㉓ 1ST-HOLD ACCUMULATOR SPRING
㉔ O-RING Replace.
㉕ 1ST-HOLD ACCUMULATOR COVER
㉖ CIRCLIP
㉗ PARKING BRAKE PAWL
㉘ PARKING BRAKE PAWL SPRING
㉙ PARKING BRAKE PAWL SHAFT
㉚ PARKING BRAKE PAWL STOPPER
㉛ PARKING BRAKE LEVER SPRING
㉜ PARKING BRAKE LEVER
㉝ PARKING BRAKE STOPPER
㉞ LOCK WASHER Replace.
㉟ DRAIN PLUG
㊱ SEALING WASHER Replace.
㊲ 1ST CLUTCH FEED PIPE
㊳ O-RINGS Replace.
㊴ FEED PIPE GUIDE
㊵ CIRCLIP
㊶ MAINSHAFT LOCKNUT (FLANGE NUT) Replace.
㊷ 1ST CLUTCH ASSEMBLY
㊸ O-RINGS Replace.
㊹ THRUST WASHER
㊺ THRUST NEEDLE BEARING
㊻ NEEDLE BEARING
㊼ MAINSHAFT 1ST GEAR
㊽ THRUST WASHER
㊾ MAINSHAFT 1ST GEAR COLLAR
㊿ 1ST-HOLD CLUTCH FEED PIPE
(51) O-RING Replace.
(52) FEED PIPE GUIDE
(53) O-RING Replace.
(54) CIRCLIP
(55) SUB-SHAFT LOCKNUT (FLANGE NUT) Replace.
(56) SUB-SHAFT DISC SPRING Replace.
(57) SUB-SHAFT 1ST GEAR
(58) LOCK WASHER Replace.
(59) THROTTLE CONTROL LEVER
(60) THROTTLE CONTROL LEVER SPRING
(61) OIL SEAL Replace.
(62) THROTTLE CONTROL CABLE HOLDER
(63) SEALING WASHERS Replace.
(64) ATF COOLER PIPE JOINT BOLT
(65) ATF COOLER PIPES
(66) ATF LEVEL GAUGE
(67) VEHICLE SPEED SENSOR
(68) O-RING Replace.
(69) ATF COOLER PIPE JOINT BOLT
(70) SEALING WASHERS Replace.

TORQUE SPECIFICATIONS

Ref. No.	Torque Value	Bolt Size	Remarks
A	12 N·m (1.2 kg-m, 9 lb-ft)	6 x 1.0 mm	
B	14 N·m (1.4 kg-m, 10 lb-ft)	6 x 1.0 mm	Special bolt
C	11 N·m (1.1 kg-m, 8 lb-ft)	6 x 1.0 mm	
D	22 N·m (2.2 kg-m, 16 lb-ft)	8 x 1.25 mm	
F	8 N·m (0.8 kg-m, 6 lb-ft)	5 x 0.8 mm	
G	29 N·m (2.9 kg-m, 21 lb-ft)	12 x 1.25 mm	ATF cooler pipe joint bolt
I	50 N·m (5.0 kg-m, 36 lb-ft)	18 x 1.5 mm	Drain plug
J	95 N·m (9.5 kg-m, 69 lb-ft)	19 x 1.25 mm	Mainshaft locknut (flange nut): Left-hand threads
K	140→0→140 N·m (14.0→0→14.0 kg-m, 101→0→101 lb-ft)	23 x 1.25 mm	Countershaft locknut (flange nut)
L	95 N·m (9.5 kg-m, 69 lb-ft)	19 x 1.25 mm	Sub-shaft locknut (flange nut)

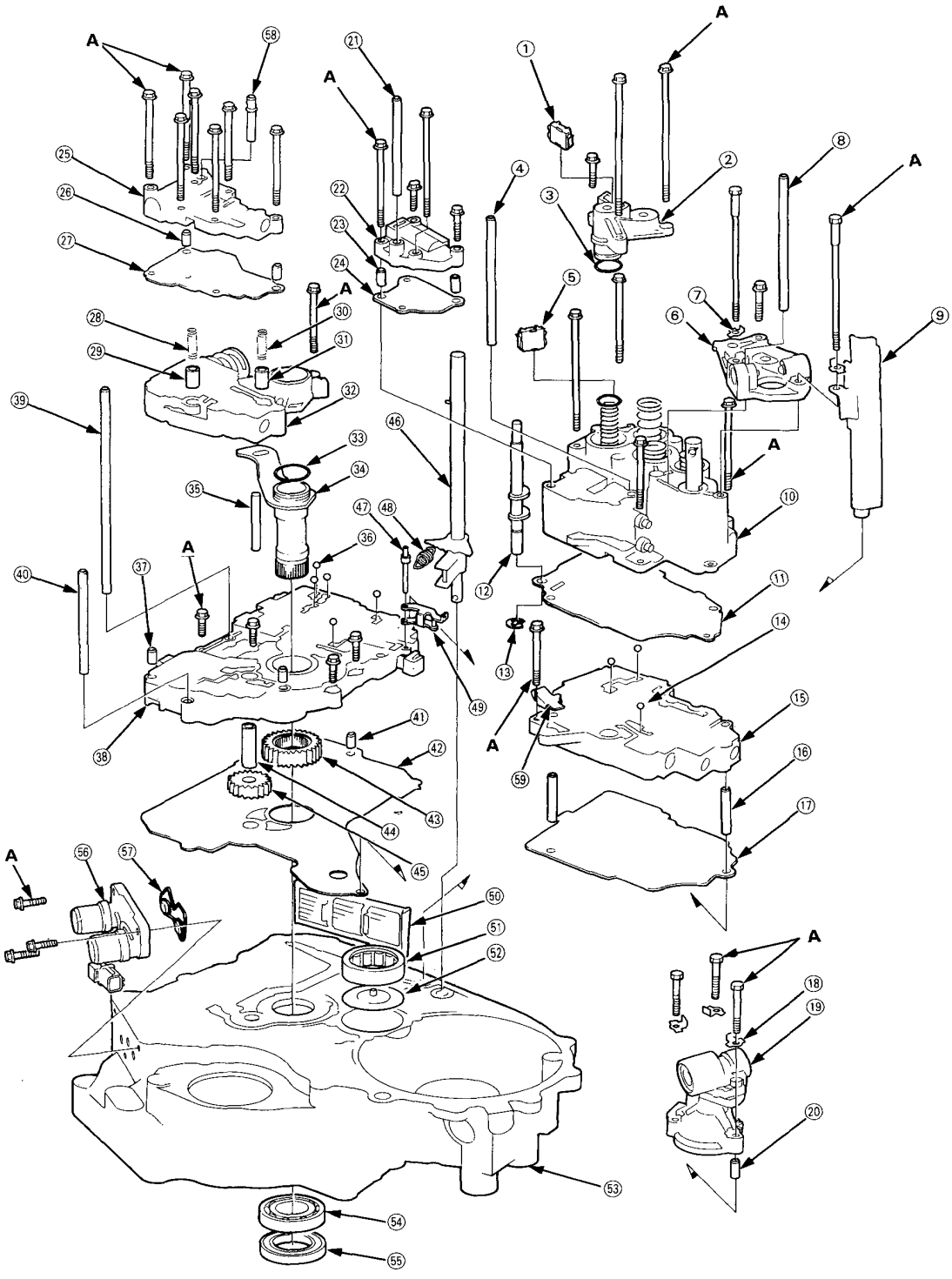

E
A
53
54
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
57
58
H
55
56
E
59
60
61
62
63
41
42
43
44
45
46
47
48
49
50
51
A
52
64
65
66
67
68
1
2
3
B
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

① COUNTERSHAFT REVERSE GEAR COLLAR
② NEEDLE BEARING
③ COUNTERSHAFT REVERSE GEAR
④ LOCK WASHER Replace.
⑤ REVERSE SHIFT FORK
⑥ REVERSE SELECTOR
⑦ REVERSE SELECTOR HUB
⑧ COUNTERSHAFT 4TH GEAR
⑨ NEEDLE BEARING
⑩ DISTANCE COLLAR, 28 mm
⑪ COUNTERSHAFT 2ND GEAR
⑫ COTTERS
⑬ THRUST NEEDLE BEARING
⑭ COUNTERSHAFT 3RD GEAR
⑮ NEEDLE BEARING
⑯ THRUST NEEDLE BEARING
⑰ SPLINED WASHER Selective part
⑱ 3RD CLUTCH ASSEMBLY
⑲ O-RINGS Replace.
⑳ COUNTERSHAFT
㉑ CIRCLIP
㉒ THRUST SHIM
㉓ THRUST NEEDLE BEARING
㉔ MAINSHAFT 4TH/REVERSE GEAR
㉕ NEEDLE BEARINGS
㉖ 4TH/REVERSE GEAR COLLAR
㉗ THRUST NEEDLE BEARING
㉘ THRUST SHIM
㉙ 2ND/4TH CLUTCH ASSEMBLY
㉚ O-RINGS Replace.
㉛ THRUST WASHER, 36.5 x 51 mm Selective part
㉜ THRUST NEEDLE BEARING
㉝ MAINSHAFT 2ND GEAR
㉞ NEEDLE BEARING
㉟ THRUST NEEDLE BEARING
㊱ MAINSHAFT
㊲ SEALING RINGS, 35 mm
㊳ SEALING RING, 29 mm
㊴ NEEDLE BEARING
㊵ SET RING
㊶ 1ST-HOLD CLUTCH ASSEMBLY
㊷ O-RINGS Replace.
㊸ THRUST SHIM
㊹ THRUST NEEDLE BEARING
㊺ NEEDLE BEARING
㊻ SUB-SHAFT 4TH GEAR
㊼ THRUST NEEDLE BEARING
㊽ SUB-SHAFT 4TH GEAR COLLAR
㊾ SUB-SHAFT
㊿ NEEDLE BEARING
(51) NEEDLE BEARING STOPPER
(52) OIL GUIDE CAP Replace.
(53) REVERSE IDLER GEAR SHAFT/HOLDER
(54) NEEDLE BEARING
(55) OIL SEAL Replace.
(56) SET RING, 80 mm Selective part
(57) TRANSMISSION HANGER
(58) TRANSMISSION MOUNT BRACKET
(59) REVERSE IDLER GEAR
(60) TRANSMISSION HOUSING GASKET Replace.
(61) DOWEL PIN
(62) SNAP RINGS
(63) TRANSMISSION HOUSING SUB-SHAFT BEARING
(64) TRANSMISSION HOUSING MAINSHAFT BEARING
(65) TRANSMISSION HOUSING COUNTERSHAFT BEARING
(66) TRANSMISSION HOUSING
(67) DIFFERENTIAL ASSEMBLY
(68) OIL SEAL Replace.

TORQUE SPECIFICATIONS

Ref. No.	Torque Value	Bolt Size	Remarks
A	12 N·m (1.2 kg-m, 9 lb-ft)	6 x 1.0 mm	
B	14 N·m (1.4 kg-m, 10 lb-ft)	6 x 1.0 mm	Special bolt
E	34 N·m (3.4 kg-m, 25 lb-ft)	8 x 1.25 mm	
H	50 N·m (5.0 kg-m, 36 lb-ft)	12 x 1.25 mm	

Torque Converter Housing/Valve Body



① **ATF MAGNET** Clean.
② **ACCUMULATOR COVER**
③ **O-RING** Replace.
④ **OIL FEED PIPE**
⑤ **ATF MAGNET** Clean.
⑥ **DETENT BASE**
⑦ **LOCK WASHERS** Replace.
⑧ **OIL FEED PIPE**
⑨ **BAFFLE PLATE**
⑩ **SERVO BODY**
⑪ **SERVO SEPARATOR PLATE**
⑫ **THROTTLE CONTROL SHAFT**
⑬ **E-RING**
⑭ **CHECK BALLS**
⑮ **SECONDARY VALVE BODY**
⑯ **DOWEL PINS**
⑰ **SECONDARY SEPARATOR PLATE**
⑱ **LOCK WASHERS** Replace.
⑲ **GOVERNOR BODY**
⑳ **DOWEL PIN**
㉑ **OIL FEED PIPE**
㉒ **MODULATOR VALVE BODY**
㉓ **DOWEL PINS**
㉔ **MODULATOR SEPARATOR PLATE**
㉕ **LOCK-UP VALVE BODY**
㉖ **DOWEL PINS**
㉗ **LOCK-UP SEPARATOR PLATE**
㉘ **COOLER CHECK VALVE SPRING**
㉙ **COOLER CHECK VALVE**
㉚ **TORQUE CONVERTER CHECK VALVE SPRING**
㉛ **TORQUE CONVERTER CHECK VALVE**
㉜ **REGULATOR VALVE BODY**
㉝ **O-RING** Replace.
㉞ **STATOR SHAFT**
㉟ **STOPPER SHAFT**
㊱ **CHECK BALLS**
㊲ **DOWEL PINS**
㊳ **MAIN VALVE BODY**
㊴ **OIL FEED PIPE**
㊵ **OIL FEED PIPE**
㊶ **DOWEL PIN**
㊷ **MAIN SEPARATOR PLATE**
㊸ **OIL PUMP DRIVE GEAR**
㊹ **OIL PUMP DRIVEN GEAR SHAFT**
㊺ **OIL PUMP DRIVEN GEAR**
㊻ **CONTROL SHAFT**
㊼ **DETENT ARM SHAFT**
㊽ **DETENT SPRING**
㊾ **DETENT ARM**
㊿ **ATF STRAINER** Clean or replace.
(51) **TORQUE CONVERTER HOUSING COUNTERSHAFT NEEDLE BEARING**
(52) **OIL GUIDE PLATE**
(53) **TORQUE CONVERTER HOUSING**
(54) **TORQUE CONVERTER HOUSING MAINSHAFT BALL BEARING**
(55) **OIL SEAL** Replace.
(56) **LOCK-UP CONTROL SOLENOID VALVE ASSEMBLY**
(57) **LOCK-UP CONTROL SOLENOID FILTER/GASKET** Replace.
(58) **OIL FEED PIPE**
(59) **STOPPER SHAFT STAY**

TORQUE SPECIFICATIONS

Ref. No.	Torque Value	Bolt Size	Remarks
A	12 N·m (1.2 kg-m, 9 lb-ft)	6 x 1.0 mm	

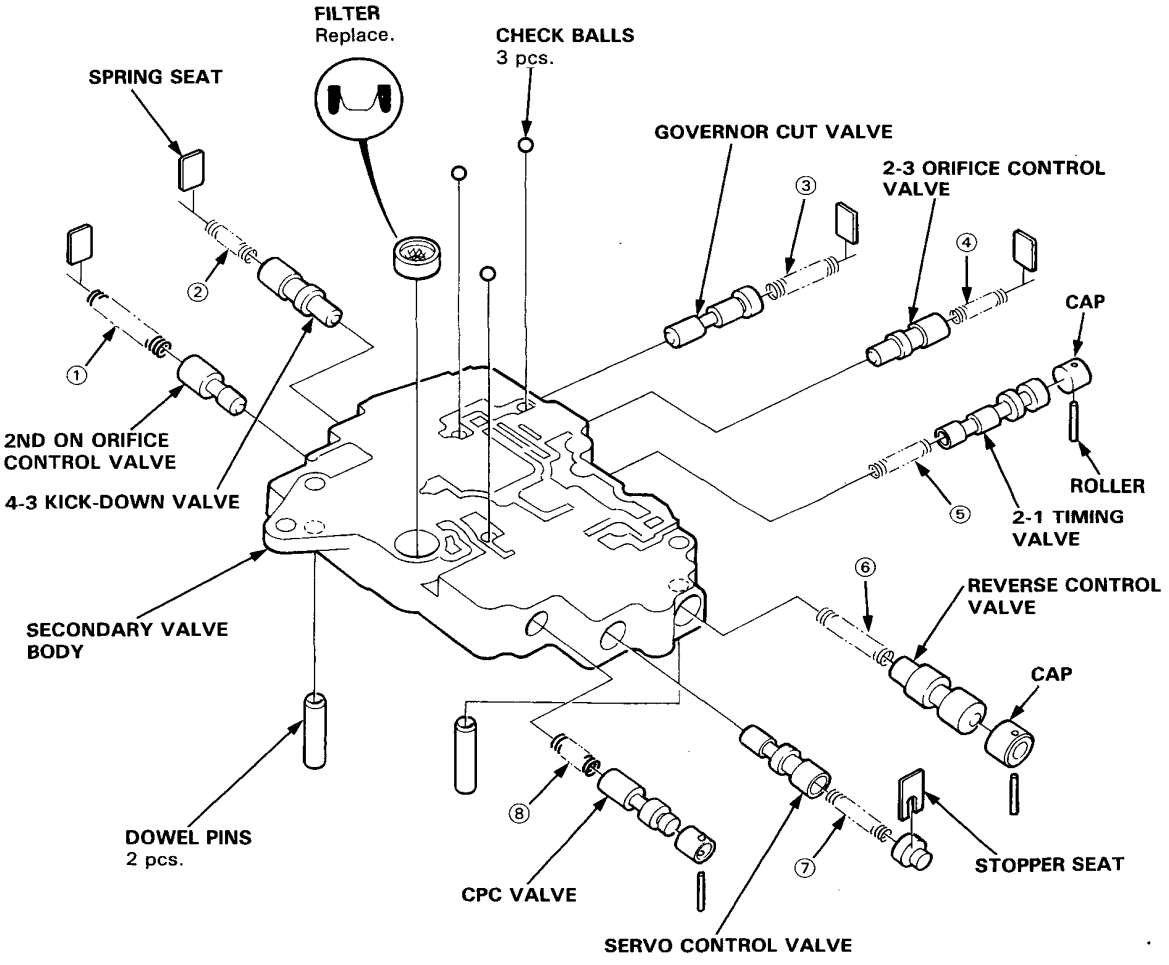
Secondary Valve Body

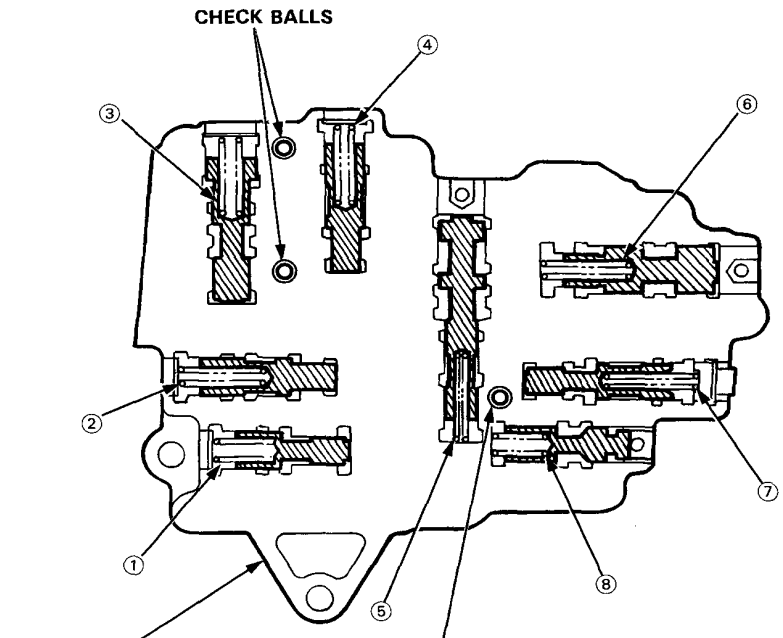
Disassembly/Inspection/Reassembly

NOTE:

- Clean all parts thoroughly in solvent or carburetor cleaner and dry with compressed air.
- Blow out all passages.
- Replace valve body as an assembly if any parts are worn or damaged.
- Check all valves for free movement. If any fail to slide freely, see Valve Body Repair .
- Coat all parts with ATF before reassembly.

CAUTION: Do not use a magnet to remove the check balls; it may magnetize the balls.





Unit of length: mm (in)

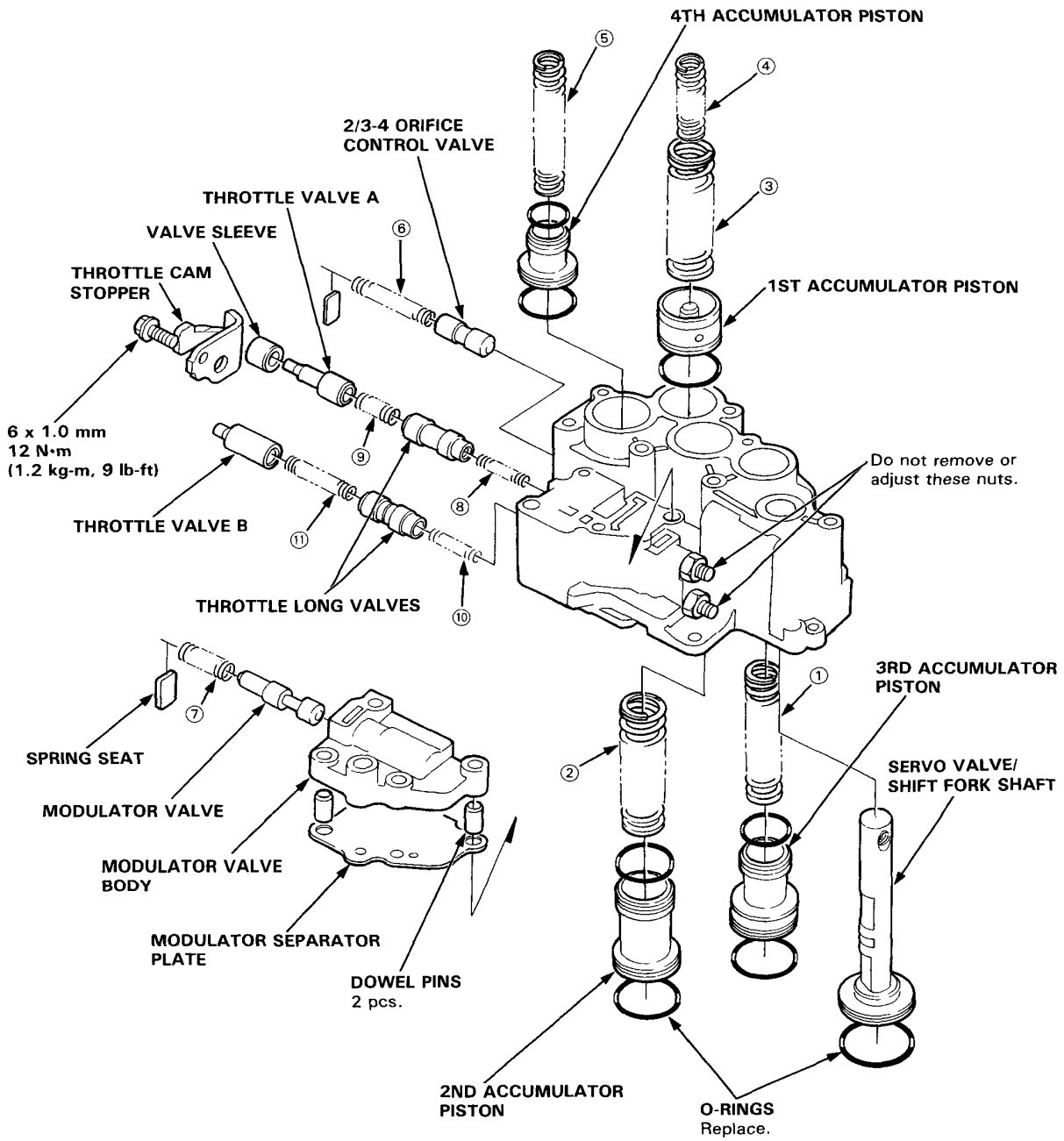
No.	Spring	Standard (New)			
		Wire Dia.	O.D.	Free Length	No. of Coils
①	2nd ON orifice control valve spring	0.9 (0.035)	8.0 (0.315)	24.1 (0.949)	9.6
②	4-3 kick-down valve spring	1.0 (0.039)	6.6 (0.260)	29.9 (1.177)	14.7
③	Governor cut valve spring	0.8 (0.031)	7.6 (0.299)	44.5 (1.752)	17.0
④	2-3 orifice control valve spring	0.9 (0.035)	6.6 (0.260)	33.2 (1.307)	14.9
⑤	2-1 timing valve spring	0.6 (0.024)	5.6 (0.220)	33.0 (1.299)	11.0
⑥	Reverse control valve spring	0.6 (0.024)	7.1 (0.280)	40.0 (1.575)	10.0
⑦	Servo control valve spring	0.9 (0.035)	6.4 (0.252)	34.1 (1.343)	17.5
⑧	CPC (Clutch Pressure Control) valve spring	0.9 (0.035)	8.4 (0.331)	24.9 (0.980)	9.8

Servo Body

Disassembly/Inspection/Reassembly

NOTE:

- Clean all parts thoroughly in solvent or carburetor cleaner and dry with compressed air.
- Blow out all passages.
- Replace valve body as an assembly if any parts are worn or damaged.
- Coat all parts with ATF before reassembly.
- Replace the O-rings and filters.



SPRING SPECIFICATIONS

Unit of length: mm (in)

No.	Spring		Standard (New)			
			Wire Dia.	O.D.	Free Length	No. of Coils
①	3rd accumulator spring		2.6 (0.102)	17.5 (0.689)	91.8 (3.614)	15.8
②	2nd accumulator spring		3.5 (0.138)	22.0 (0.866)	77.0 (3.031)	9.5
③	1st accumulator spring A		2.6 (0.102)	24.3 (0.957)	101.9 (4.012)	11.6
④	1st accumulator spring B		2.3 (0.091)	9.9 (0.390)	49.0 (1.929)	4.6
⑤	4th accumulator spring		2.6 (0.102)	16.0 (0.630)	90.1 (3.547)	15.6
⑥	2/3-4 orifice control valve spring		1.0 (0.039)	8.6 (0.339)	51.9 (2.043)	19.8
⑦	Modulator valve spring	Australia model and Czecho/Slovakia D16Z6 engine model	1.2 (0.047) 1.2 (0.047)	*7.0 (0.276) *7.0 (0.276)	27.2 (1.071) 26.3 (1.035)	8.0 8.0
		Czecho/Slovakia D15B2 engine model	1.2 (0.047) 1.2 (0.047)	*7.0 (0.276) *7.0 (0.276)	27.2 (1.071) 27.6 (1.087)	8.0 7.7
		Other models	1.2 (0.047)	*7.0 (0.276)	27.2 (1.071)	8.0
⑧	Throttle valve A adjusting spring		0.8 (0.031)	6.2 (0.244)	27.0 (1.063)	8.5
⑨	Throttle valve A spring		1.1 (0.043) 1.0 (0.039) 1.1 (0.043) 1.0 (0.039)	8.5 (0.335) 8.5 (0.335) 8.5 (0.335) 8.5 (0.335)	22.3 (0.878) 22.2 (0,874) 22.3 (0.878) 22.1 (0.870)	8.1 6.0 7.6 5.5
⑩	Throttle valve B adjusting spring		0.8 (0.031)	6.2 (0.244)	30.0 (1.181)	8.0
⑪	Throttle valve B spring		1.4 (1.653) 1.4 (1.653) 1.4 (1.653)	8.5 (0.335) 8.5 (0.335) 8.5 (0.335)	41.5 (1.634) 41.5 (1.634) 41.6 (1.638)	10.5 11.2 12.4

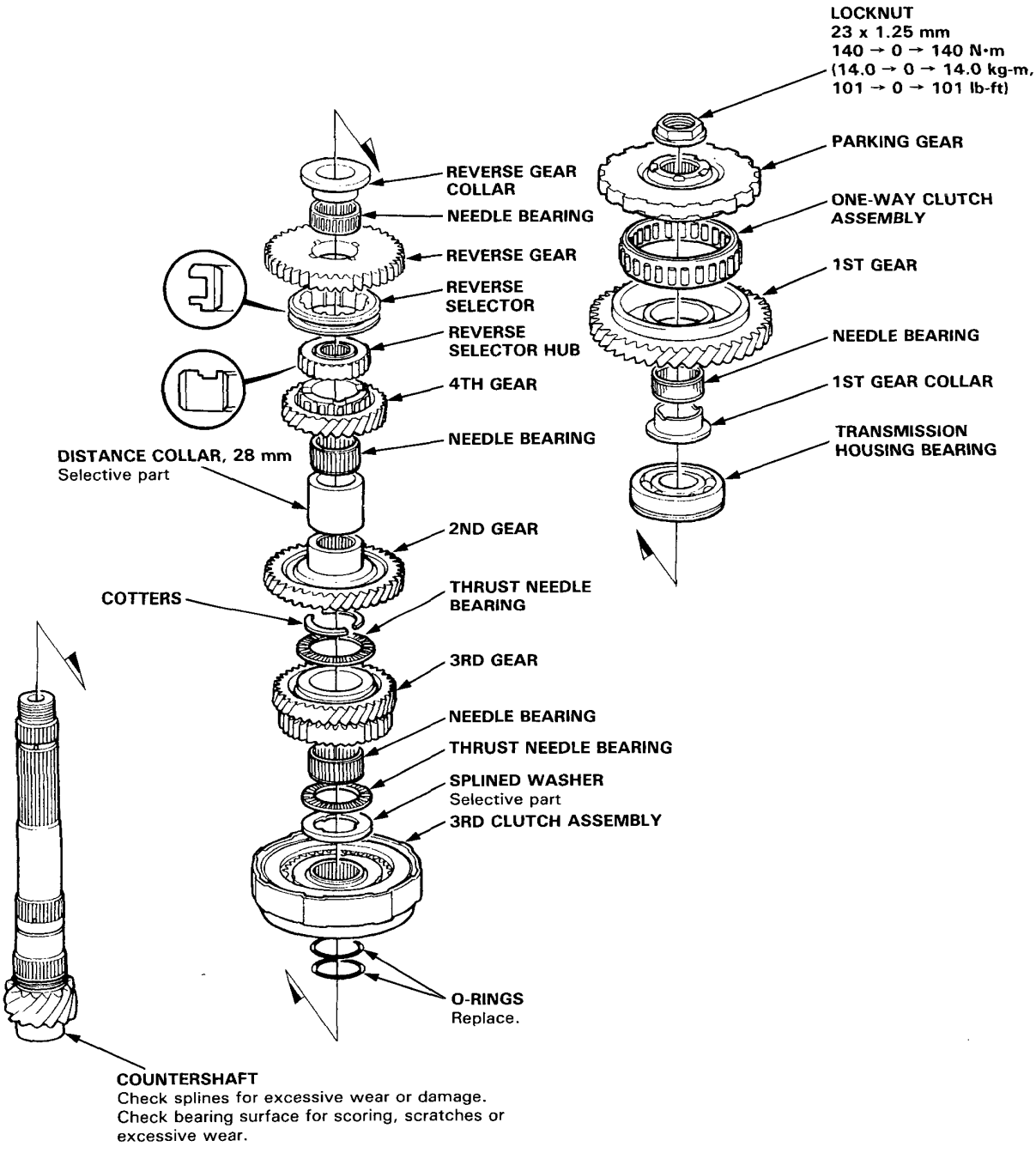
*: Inside diameter

Countershaft

Disassembly/Inspection/Reassembly

NOTE:

- Lubricate all parts with ATF before reassembly.
- Install thrust needle bearings with unrolled edge of bearing retainer facing washer.
- Inspect the thrust needle bearings and the needle bearings for galling and rough movement.
- Before installing the O-rings, wrap the shaft splines with tape to prevent damaging the O-rings.

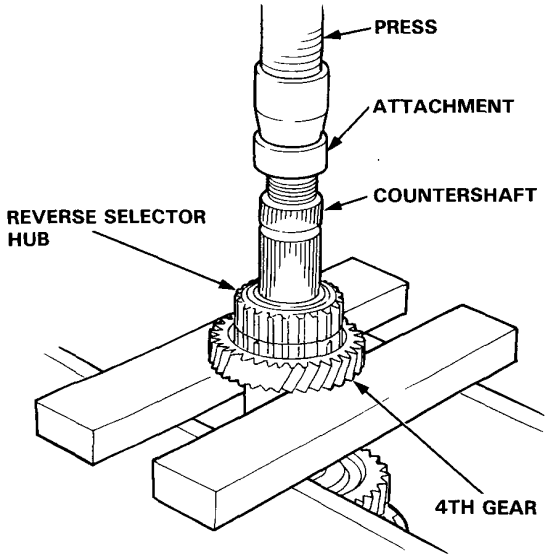


Disassembly/Reassembly

1. Using a hydraulic press, press out the countershaft while supporting 4th gear.

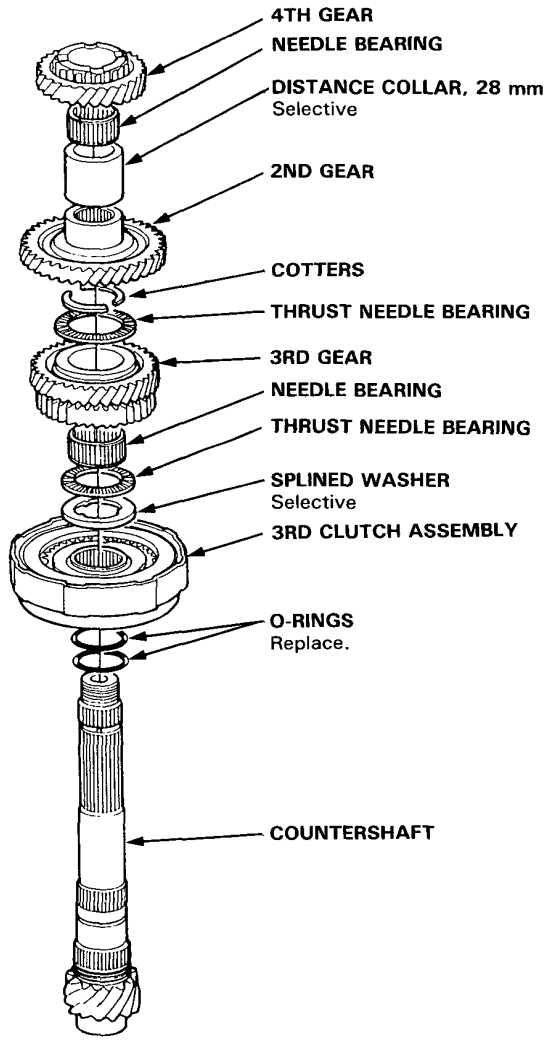
   NOTE: Place an attachment between the press and the countershaft to prevent damage to the shaft.

   CAUTION: *Do not allow the countershaft to fall* and hit the ground.



2. Assemble the parts below on the countershaft as shown below.

   NOTE:
   - Lubricate all parts with ATF during assembling.
   - Before installing the O-rings, wrap the shaft splines with tape to prevent damaging the O-rings.

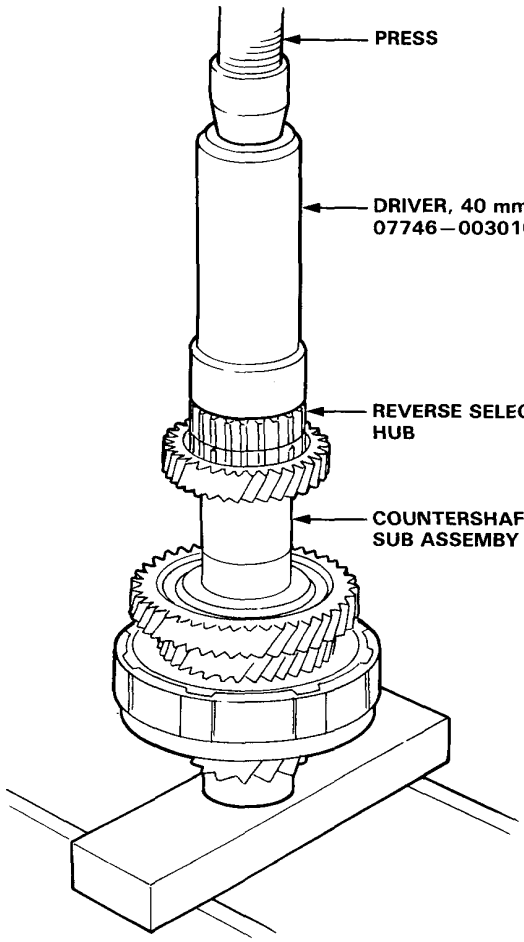


(cont'd)

Countershaft

Disassembly/Reassembly (cont'd)

3. Install the reverse selector hub on the countershaft sub assembly, and then press the reverse selector hub using the special tool and a press as shown.



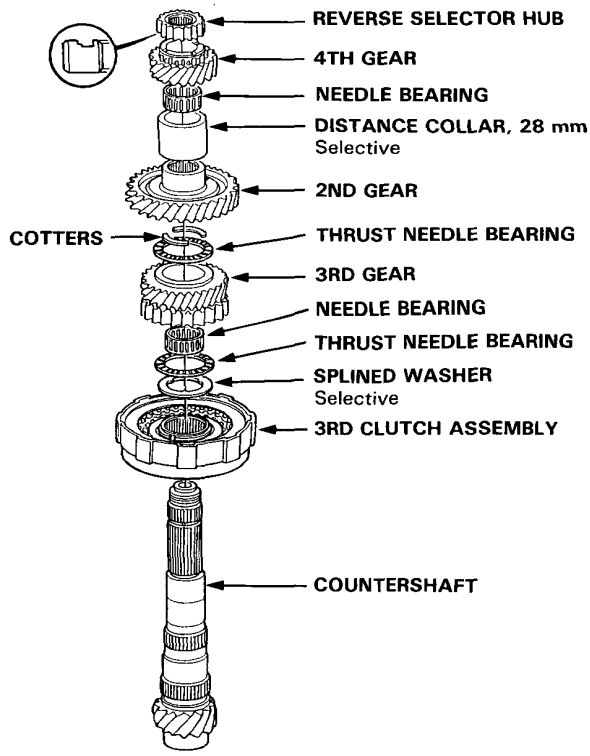
Inspection

- Clearance Measurement

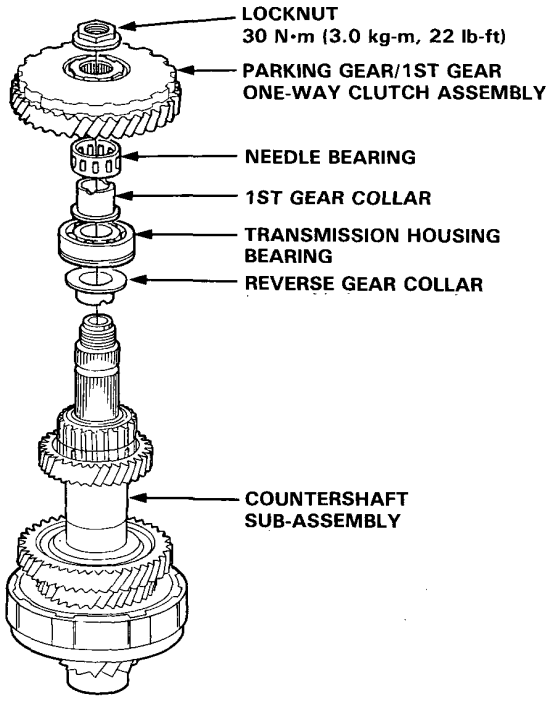
NOTE: Lubricate all parts with ATF during assembly.

1. Remove the countershaft bearing from the transmission housing.
2. Install the parts below on the countershaft using the special tool and a press as described on this page.

NOTE: Do not assemble the O-rings while inspecting.



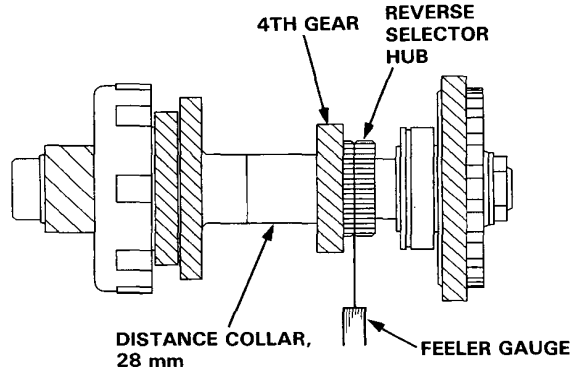
3. Install the parts below on the countershaft sub-assembly, then torque the locknut to 30 N·m (3.0 kg-m, 22 lb-ft).

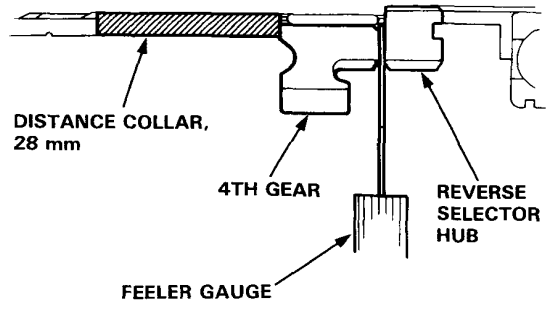


4. Measure the clearance between 4th gear and the reverse selector hub with a feeler gauge.

NOTE: Take measurements in at least three places and take the average as the actual clearance.

STANDARD: 0.05—0.13 mm (0.002—0.005 in)





(cont'd)

Inspection (cont'd)

5. Measure the clearance between 3rd gear and 2nd gear using a feeler gauge, while leaving the feeler gauge from step 4 between 4th gear and reverse selector hub.

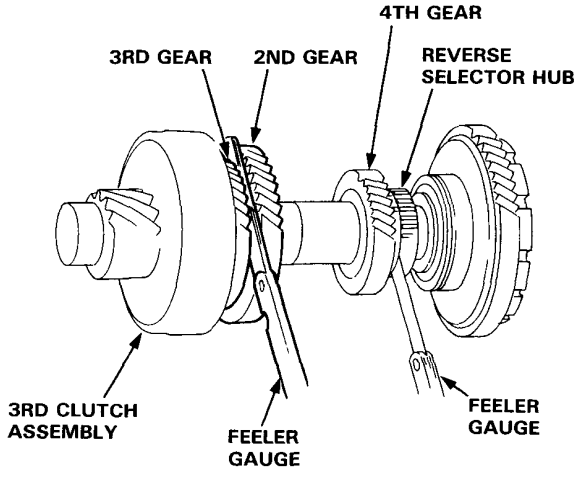
   —1. Measure the clearance with 3rd gear pushed towards the 3rd clutch.

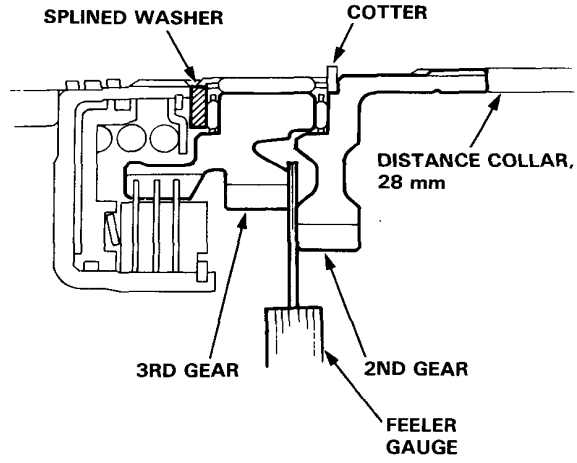
   —2. Measure the clearance with 3rd gear pushed towards the 2nd gear.

   NOTE: Take measurements in at least three places and take the average as the actual clearance.

   —3. Subtract the measurements of step 2 from step 3, and you have the clearance between 3rd gear and 2nd gear.

   STANDARD: 0.05—0.13 mm (0.002—0.005 in)





6. If the clearance is out of tolerance, remove the splined washer and/or distance collar and measure the thickness and/or the width.

7. Select and install a new distance collar, then recheck.

DISTANCE COLLAR 28 mm

No.	Part Number	Thickness
1	90503-PC9-000	39.00 mm (1.535 in)
2	90504-PC9-000	39.10 mm (1.539 in)
3	90505-PC9-000	39.20 mm (1.543 in)
4	90507-PC9-000	39.30 mm (1.547 in)
5	90508-PC9-000	39.05 mm (1.537 in)
6	90509-PC9-000	39.15 mm (1.541 in)
7	90510-PC9-000	39.25 mm (1.545 in)
8	90511-PC9-000	38.90 mm (1.531 in)
9	90512-PC9-000	38.95 mm (1.533 in)

8. After replacing the distance collar, make sure the clearance is within tolerance.

9. Select and install a new splined washer, then recheck.

SPLINED WASHER 35 x 52 mm

No.	Part Number	Thickness
1	90411-PF4-000	3.00 mm (0.118 in)
2	90412-PF4-000	3.05 mm (0.120 in)
3	90413-PF4-000	3.10 mm (0.122 in)
4	90414-PF4-000	3.15 mm (0.124 in)
5	90415-PF4-000	3.20 mm (0.126 in)
6	90416-PF4-000	3.25 mm (0.128 in)
7	90417-PF4-000	3.30 mm (0.130 in)
8	90418-PF4-000	3.35 mm (0.132 in)
9	90419-PF4-000	3.40 mm (0.134 in)
10	90411-P24-J00	3.45 mm (0.136 in)
11	90412-P24-J00	3.50 mm (0.138 in)
12	90413-P24-J00	3.55 mm (0.140 in)
13	90414-P24-J00	3.60 mm (0.142 in)

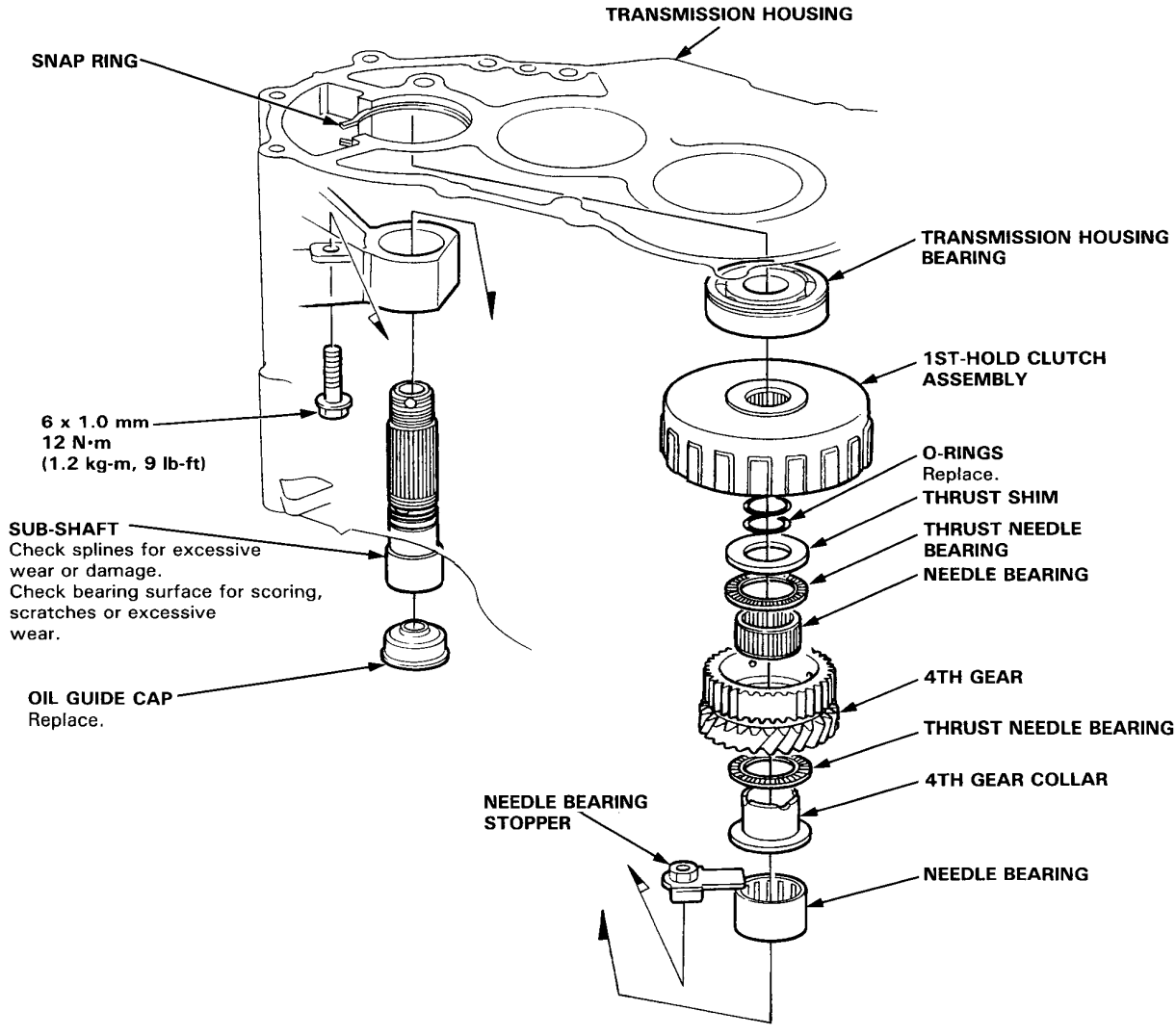
10. After replacing the splined washer, make sure the clearance is within tolerance.

Sub-shaft

Disassembly/Inspection/Reassembly

NOTE:

- Lubricate all parts with ATF before reassembly.
- Install thrust needle bearings with unrolled edge of bearing retainer facing washer.
- Inspect the thrust needle bearings and the needle bearings for galling and rough movement.
- Before installing the O-rings, wrap the shaft splines with tape to prevent damaging the O-rings.

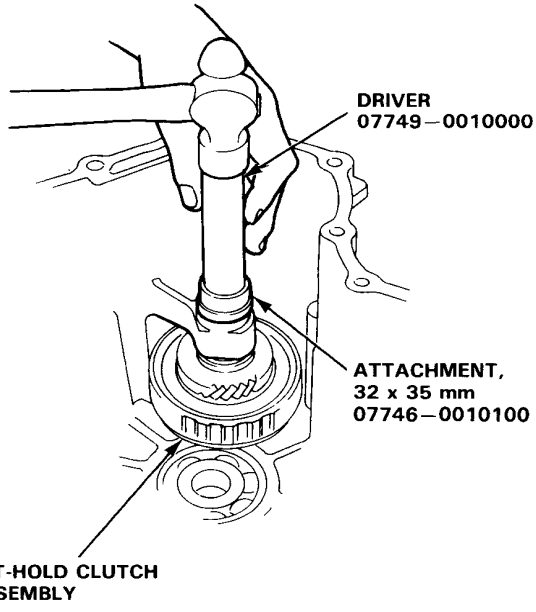


Sub-Shaft

Disassembly/Reassembly

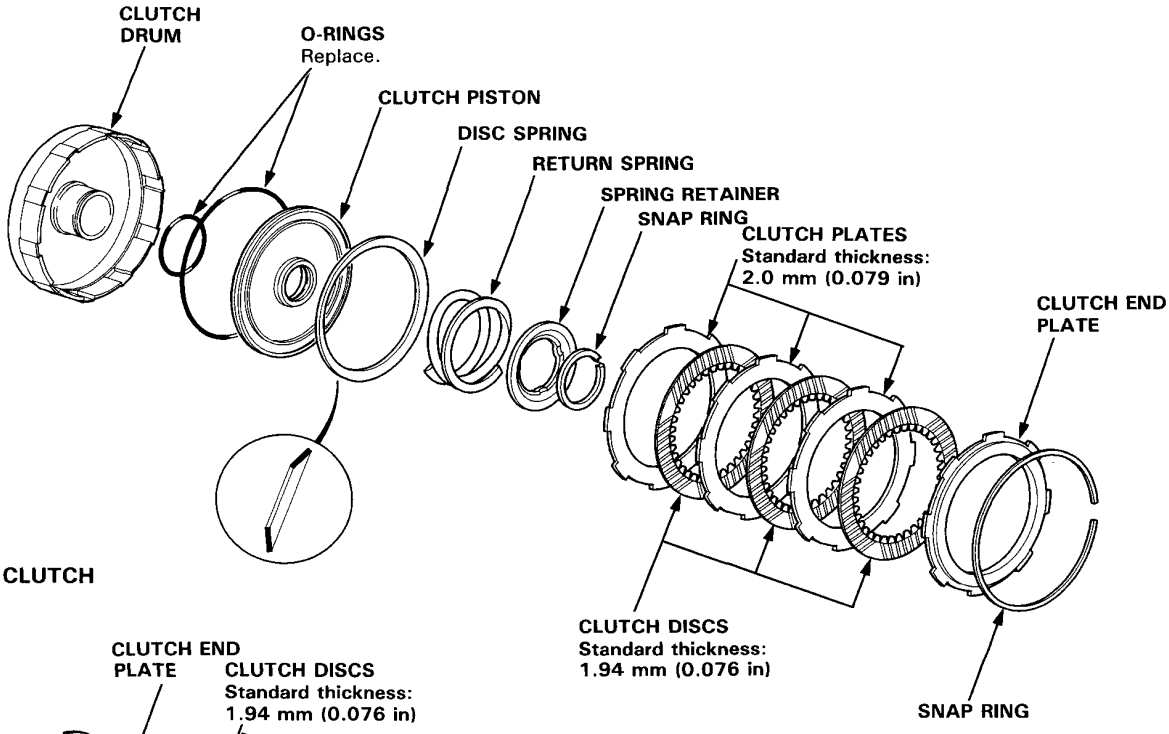
1. Remove the oil guide cap by pushing the sub-shaft inside the transmission housing.
2. Remove the 1st-hold clutch assembly by pulling the sub-shaft, then remove the sub-shaft.
3. Install new O-rings on the sub-shaft.

   NOTE: Wrap the shaft splines with tape to prevent damaging the O-rings.
4. Place the sub-shaft in the transmission housing and install the 1st-hold clutch assembly.
5. Install new oil guide cap using the special tools as shown.

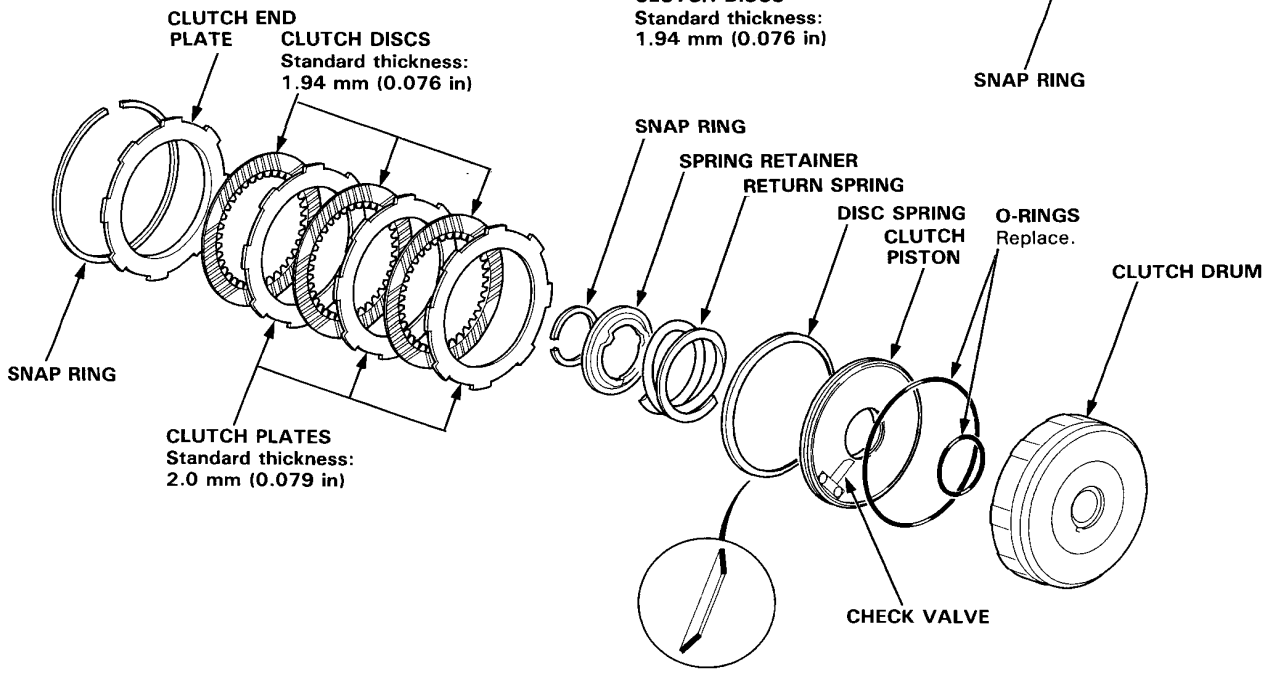


Illustrated Index

3RD CLUTCH

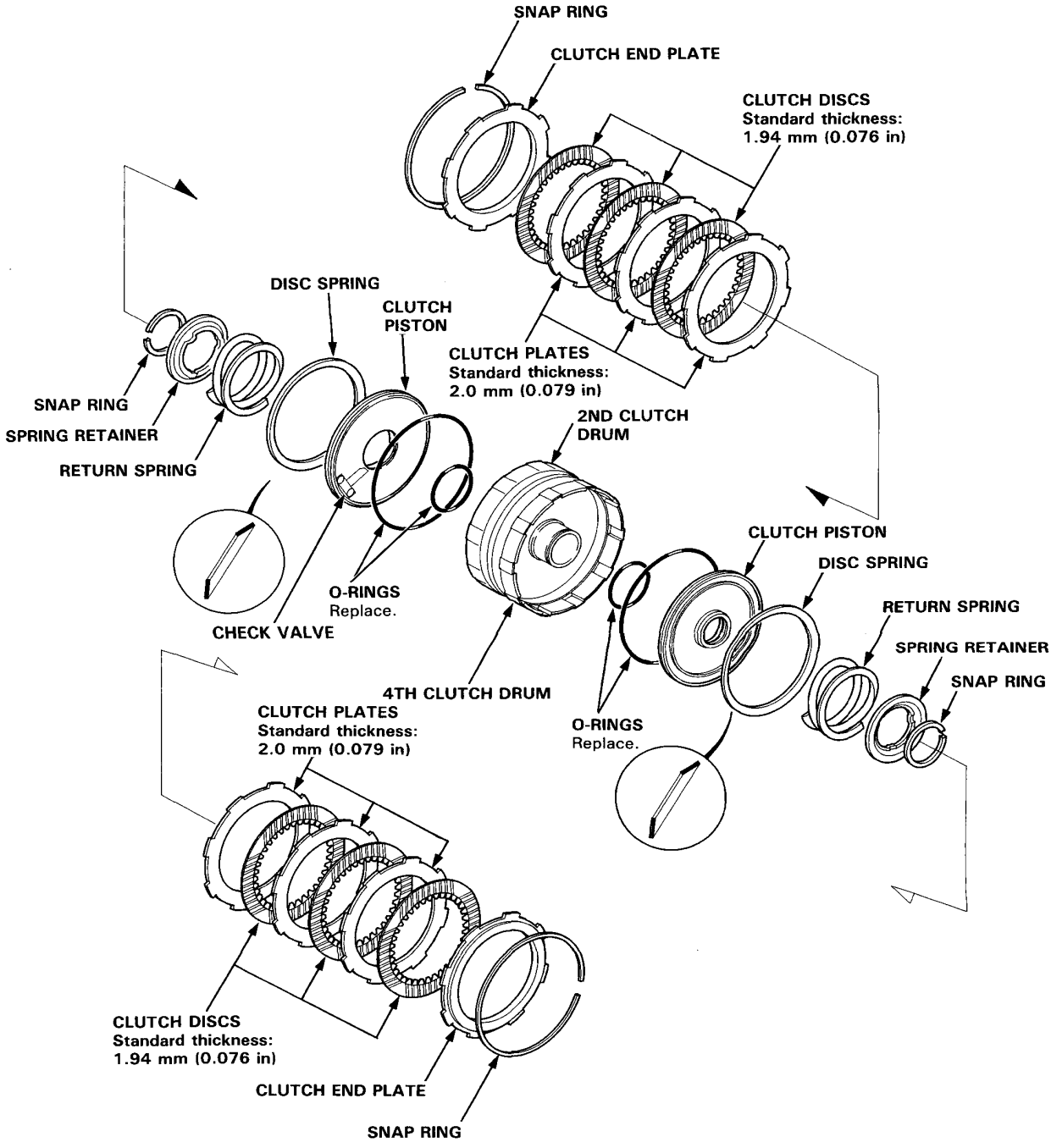


1ST CLUTCH

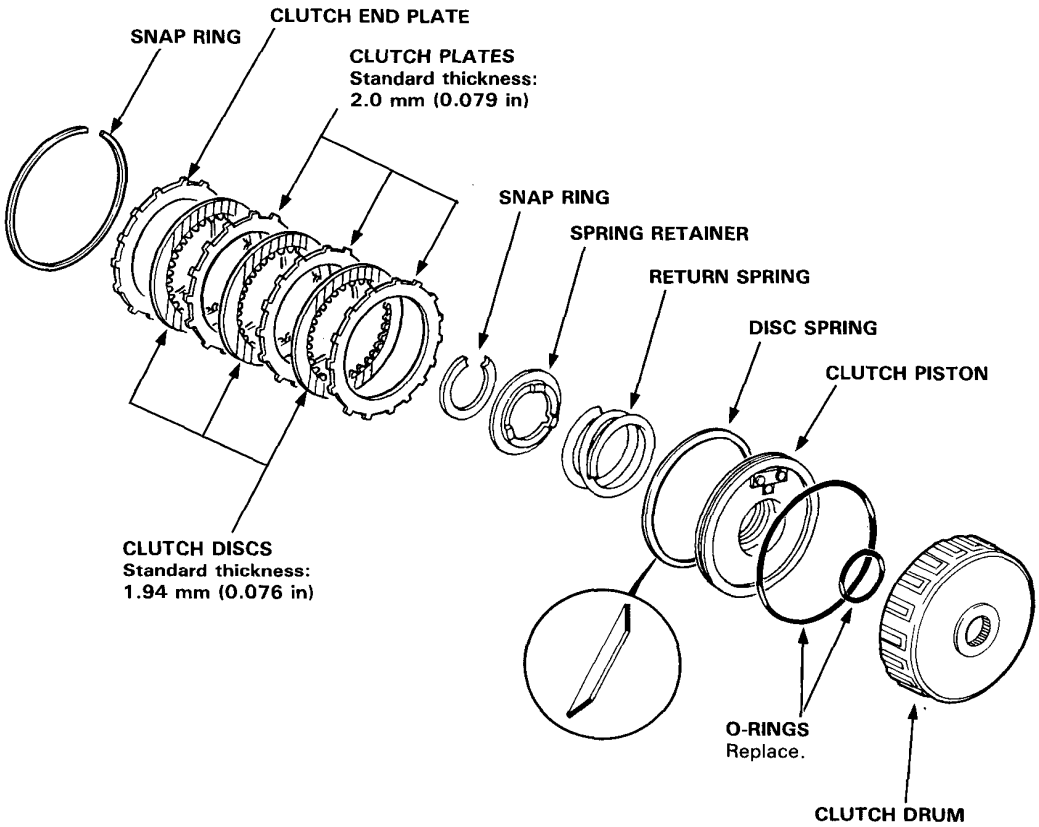


Illustrated Index (cont'd)

2ND/4TH CLUTCH



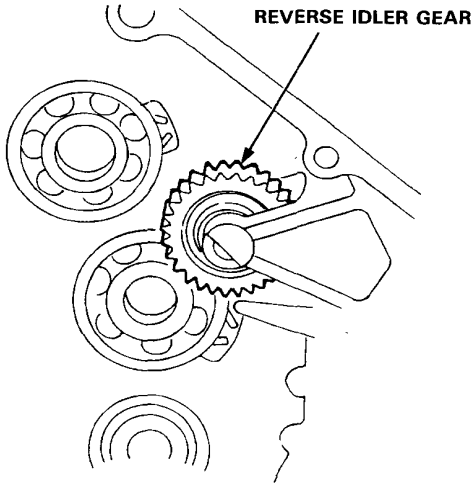
1ST-HOLD CLUTCH



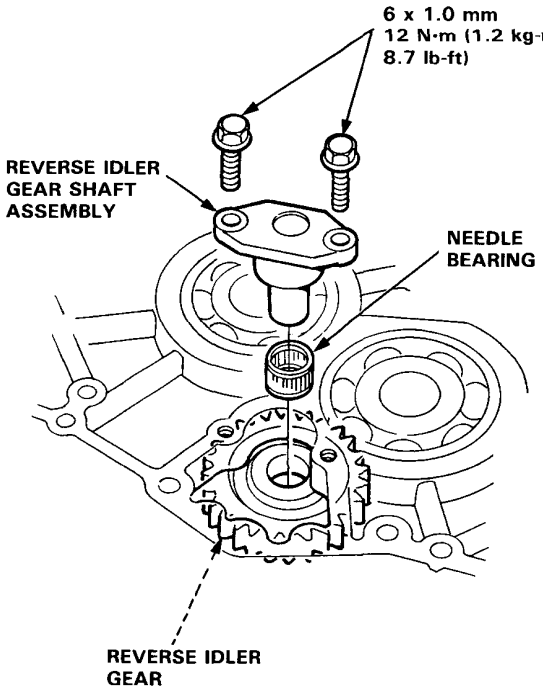
Reverse Idler Gear

Installation

1. Install the reverse idler gear.



2. Install the reverse idler gear shaft holder and needle bearing into the transmission housing, then tighten the bolts.



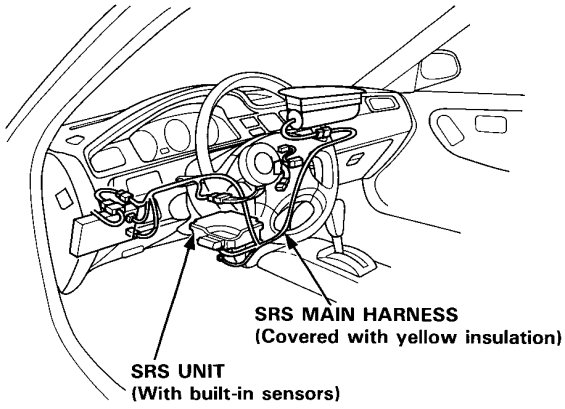
Shift Indicator Panel (KB model)

Adjustment

CAUTION:

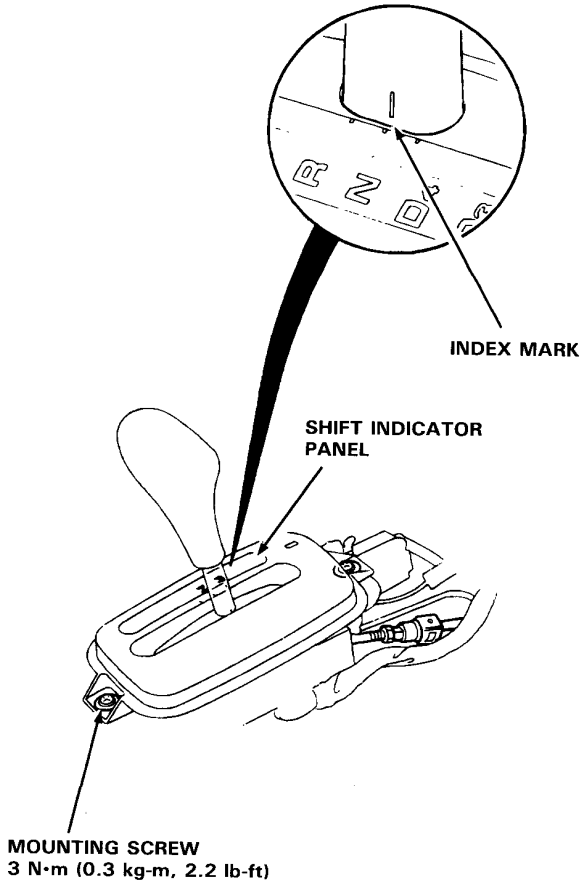
- **All SRS wire harnesses are covered with yellow insulation. Before you disconnect any part of an SRS wire harness, connect the short connectors.**
- **Whenever the ignition switch is ON, be careful not to bump the SRS unit; the airbags could accidentally deploy and cause damage or injuries.**
- **Refer to additional precautions beginning on page 23-21 in the SRS sub-section.**

SRS Type III:



1. Check that the index mark on the indicator aligns with the [N] mark on the shift indicator panel when the transmission in NEUTRAL.
2. If not aligned, remove the center console (see section 20).
3. Remove the shift indicator panel mounting screws and adjust by moving the panel.

   NOTE: Whenever the shift indicator panel is removed, reinstall the panel as described above.

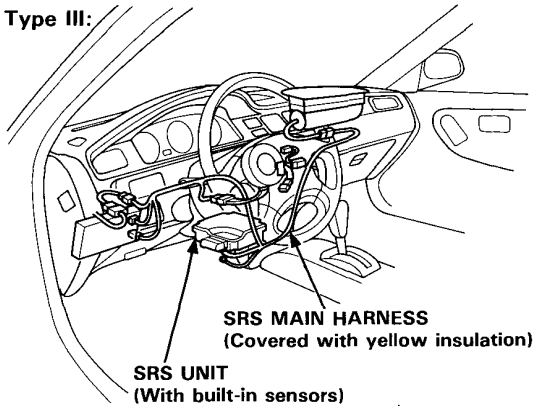


Shift Cable (KB model)

Removal/Installation

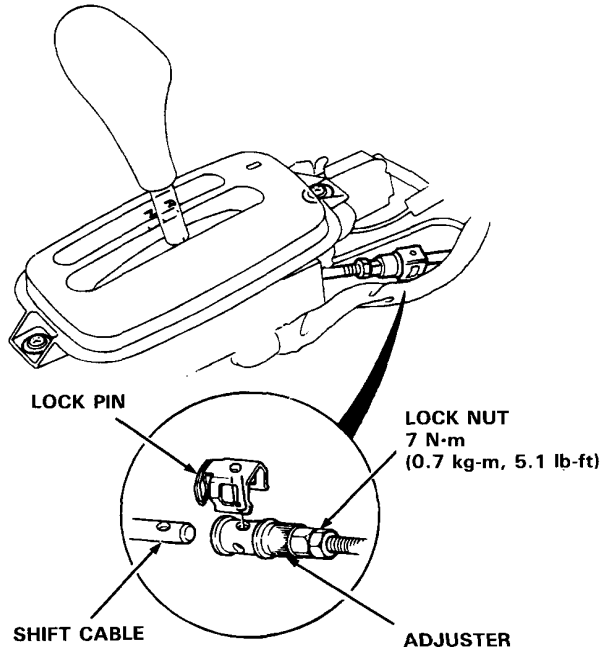
CAUTION:
- **All SRS wire harnesses are covered with yellow insulation. Before you disconnect any part of an SRS wire harness, connect the short connectors.**
- **Whenever the ignition switch is ON, be careful not to bump the SRS unit; the airbags could accidentally deploy and cause damage or injuries.**
- **Refer to additional precautions beginning on page 23-21 in the SRS sub-section.**

SRS Type III:

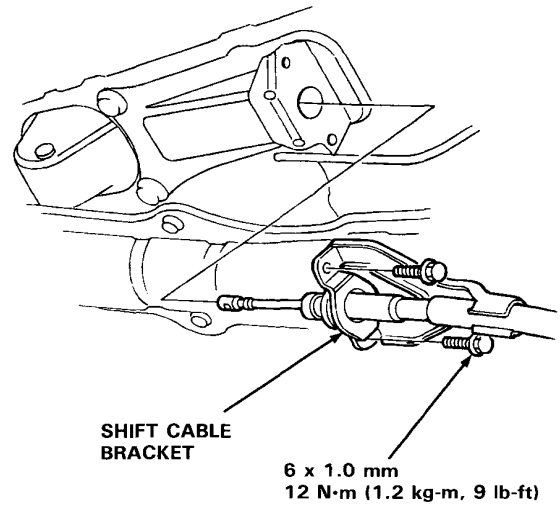


⚠ WARNING Make sure lifts are placed properly (see section 1).

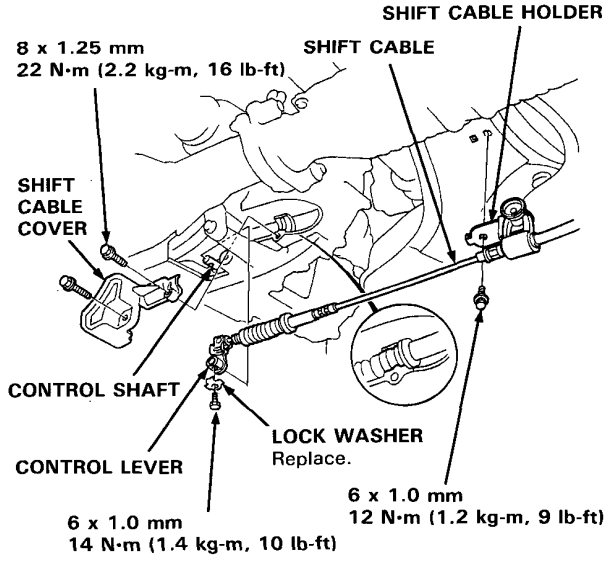
1. Remove the center console (see section 20).
2. Shift to [N] position, then remove the lock pin from the cable adjuster.



3. Remove the shift cable bracket.



4. Remove the shift cable holder.
5. Remove the shift cable cover.
6. Remove the control lever from the control shaft, then remove the shift cable. Take care not to bend the cable when removing/installing it.



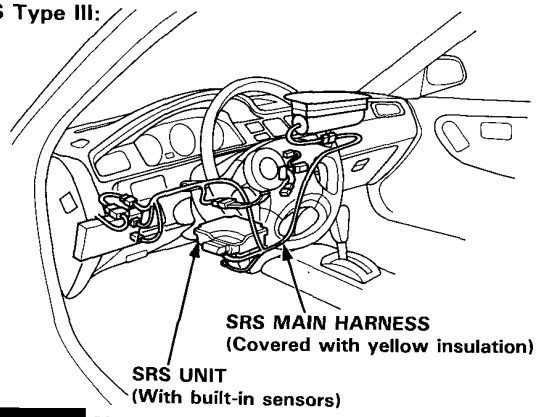
7. Install the shift cable in the reverse order of removal.
8. Check the cable adjustment on reassembly, on page 14-31.

Adjustment

CAUTION:

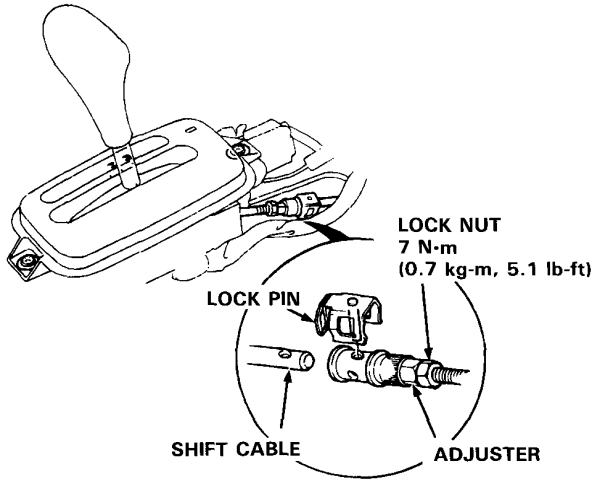
- **All SRS wire harnesses are covered with yellow insulation. Before you disconnect any part of an SRS wire harness, connect the short connectors.**
- **Whenever the ignition switch is ON, be careful not to bump the SRS unit; the airbags could accidentally deploy and cause damage or injuries.**
- **Refer to additional precautions beginning on page 23-21 in the SRS sub-section.**

SRS Type III:

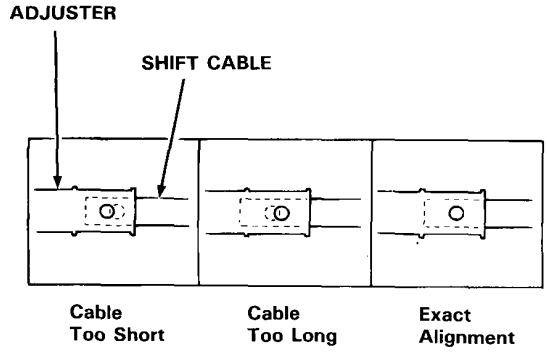


⚠ WARNING Make sure lifts are placed properly (see section 1).

1. Start the engine. Shift to [P] position to see if the *reverse gear engages. If so, refer to troubleshooting.*
2. With the engine off, remove the center console (see section 20).
3. Shift to [N] position, then remove the lock pin from the cable adjuster.



4. *Check that the hole in the adjuster is perfectly* aligned with the hole in the shift cable. There are two holes in the end of the shift cable. They are positioned 90° apart to allow cable adjustment in 1/4 turn increments.



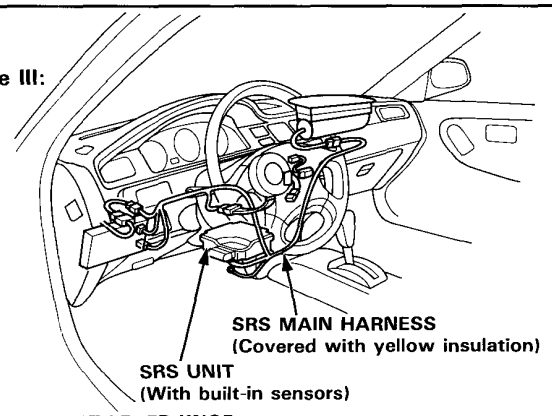
5. If not perfectly aligned, loosen the locknut on the shift cable and adjust as required.
6. Tighten the locknut to 7 N·m (0.7 kg-m, 5 lb-ft).
7. Install the lock pin on the adjuster. If you feel the lock pin binding as you reinstall it, the cable is still out of adjustment and must be read usted.
8. Move the selector to each gear and verify that the automatic transaxle gear position indicator follows the automatic transaxle gear position switch.
9. Start the engine and check the shift lever in all gears. If any gear does not work properly, refer to troubleshooting.
10. *Insert the ignition key into the key cylinder on the* shift indicator panel, verify that the shift lock lever is released.

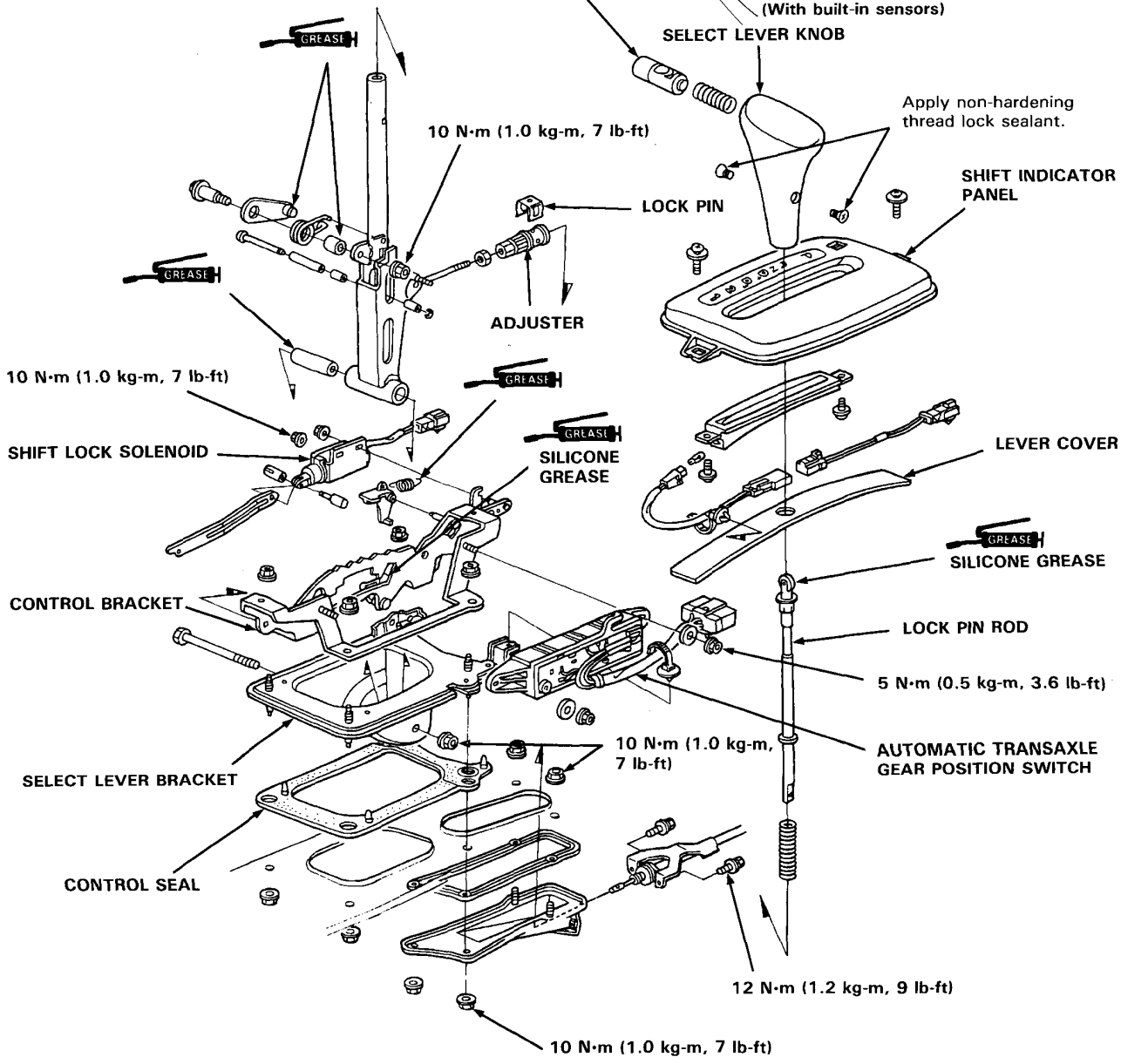
Gearshift Selector (KB model)

Disassembly/Reassembly

CAUTION:

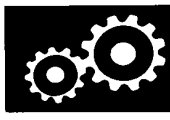
- All SRS wire harnesses are covered with yellow insulation. Before you disconnect any part of an SRS wire harness, connect the short connectors.
- Whenever the ignition switch is ON, be careful not to bump the SRS unit; the airbags could accidentally deploy and cause damage or injuries.
- Refer to additional precautions beginning on page 23-21 in the SRS sub-section.





4WD Automatic Transmission

Service Precautions **14-34**
Transfer Housing
Illustrated Index **14-36**



Outline of Model Change

- 4WD disengagement mechanism has been abolished.

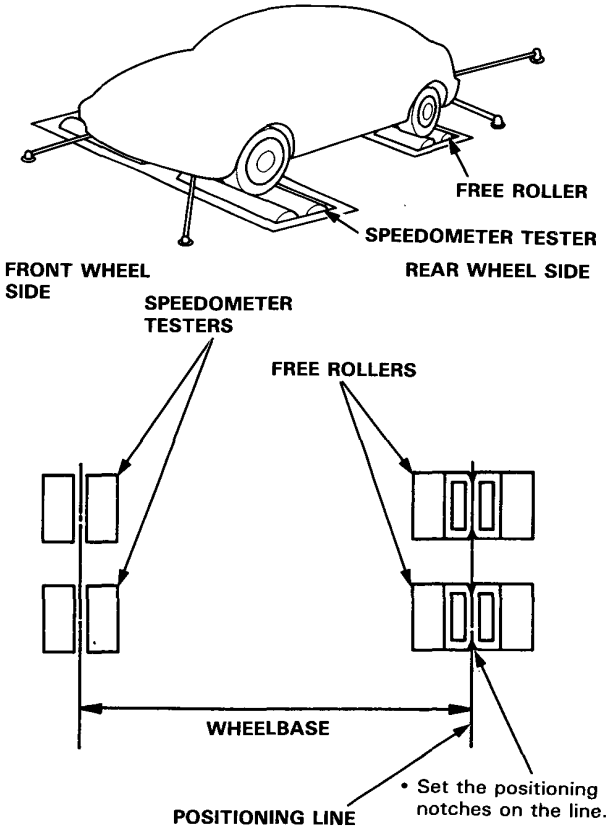
This 4-wheel drive model is not equipped with the system that mechanically shifts the drive system to the 2-wheel drive.

Therefore, perform the speedometer test by using the free rollers.

Tip on use of free roller:
- Test cannot be made by using the chassis dynamometer.
- Do not operate the accelerator pedal, clutch, brake system and steering wheel quickly. The car can roll hard or dash out during the test which is very dangerous.
- Do not raise the speed more than 50 km/h.
- Do not use the free rollers continuously for more than 3 minutes at one try.
- Secure the car for safety. Attach the ropes to the car not to allow it to roll or dash out during the test. (Use the free rollers for the rear wheels)

1. Set each of the free rollers at the wheelbase and track of the car.

   NOTE: Be sure that the free rollers and speedometer tester rollers are set parallel with each other.

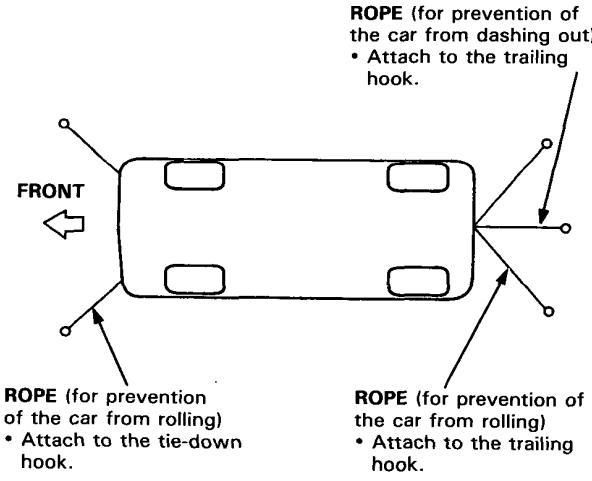


2. Move the car to set the front wheels on the speedometer testers and the rear wheels on the free rollers. Be sure that the wheels are set at the center of the speedometer testers and free rollers respectively.

   CAUTION: Be sure that the front and rear wheels are set at the center of the speedometer tester and free rollers securely, or the car can roll hard or dash out during the test, which is very dangerous.

3. Attach the ropes to the trailing hook and tie-down hooks to secure the car (For prevention of the car from rolling hard or dashing out during the test).

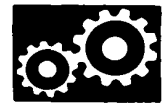
   CAUTION:
   - **Be sure that the ropes attached to the car for prevention of rolling are not slack. Slack ropes do not effectively secure the car and the car can roll during the test.**
   - **Attach the ropes to the car not to interfere with the bumper.**
   - **Do not attach the ropes to any section other than the specified section.**


ROPE (for prevention of the car from dashing out)
• Attach to the trailing hook.
FRONT
ROPE (for prevention of the car from rolling)
• Attach to the tie-down hook.
ROPE (for prevention of the car from rolling)
• Attach to the trailing hook.

4. Start the engine. With the gearshift lever in the 3rd range on the manual transmission car or the gearshift lever in the D1 or D2 position on the automatic transmission car, start the car and raise the speed gradually.

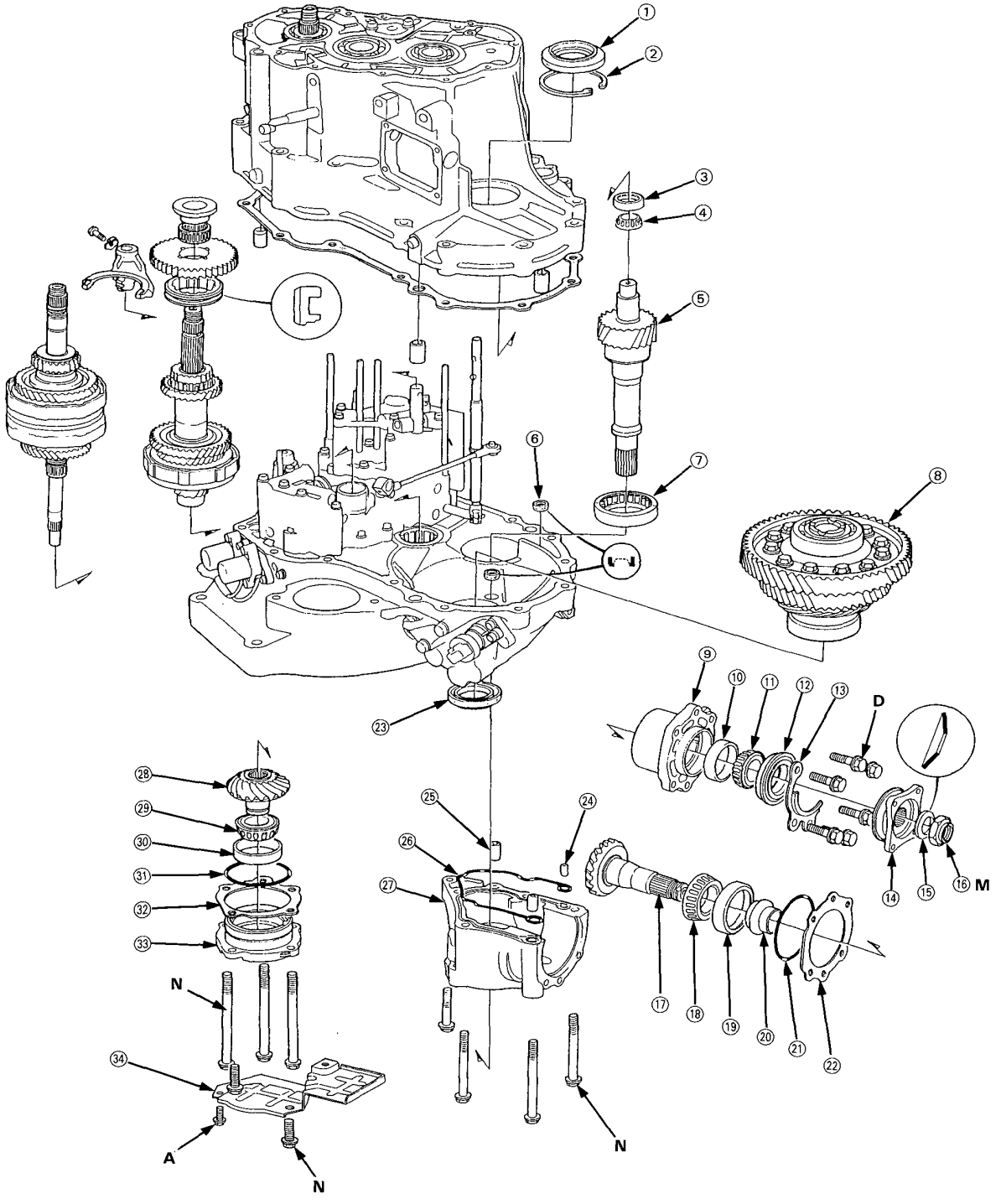
   CAUTION: Take care not to exceed 50 km/h of speed and do not test for more than 3 minutes continuously.

5. After the test, slow down the car until it stops by applying the brake gradually.



Transfer Housing

Illustrated Index



① **OIL SEAL** Replace.
② **SET RING, 80 mm** Selective part
③ **BEARING OUTER RACE**
④ **BEARING INNER RACE**
⑤ **TRANSFER SHAFT/DRIVEN GEAR**
⑥ **OIL SEAL** Replace.
⑦ **NEEDLE BEARING**
⑧ **DIFFERENTIAL ASSEMBLY**
⑨ **TRANSFER REAR COVER**
⑩ **BEARING OUTER RACE**
⑪ **BEARING INNER RACE**
⑫ **OIL SEAL** Replace.
⑬ **DUST COVER**
⑭ **COMPANION FLANGE**
⑮ **DISC SPRING** Replace.
⑯ **DRIVEN GEAR SHAFT LOCKNUT** Replace.
⑰ **TRANSFER DRIVEN GEAR SHAFT**
⑱ **BEARING INNER RACE**
⑲ **BEARING OUTER RACE**
⑳ **TRANSFER SPACER**
㉑ **O-RING** Replace.
㉒ **DRIVEN GEAR THRUST SHIM** Selective part
㉓ **OIL SEAL** Replace.
㉔ **DOWEL PIN**
㉕ **DOWEL PIN**
㉖ **SPECIAL SEAL** Replace.
㉗ **TRANSFER HOUSING**
㉘ **TRANSFER DRIVE GEAR**
㉙ **BEARING INNER RACE**
㉚ **BEARING OUTER RACE**
㉛ **O-RING** Replace.
㉜ **TRANSFER THRUST SHIM** Selective part
㉝ **TRANSFER L. SIDE COVER**
㉞ **L. SIDE COVER PROTECTOR**

TORQUE SPECIFICATIONS

Ref. No.	Torque value	Bolt Size	Remarks
A	12 N•m (1.2 kg-m, 9 lb-ft)	6 x 1.0 mm	
D	26 N•m (2.6 kg-m, 19 lb-ft)	8 x 1.25 mm	
N	45 N•m (4.5 kg-m, 33 lb-ft)	10 x 1.25 mm	
M	120—230 N•m (12.0—23.0 kg-m, 87—166 lb-ft)		Driven Gear Shaft Locknut

Rear Differential

Service Precautions 15-2
Special Tools 15-3
Description
  Realtime 4WD-Dual Pump System 15-4
Realtime 4WD-Dual Pump System Troubleshooting
  Forward Drive Quick Starting (4WD) 15-10
  Reverse Drive Quick Starting (4WD) 15-11
  Forward Drive Quick Braking (2WD) 15-12
  Reverse Drive Quick Braking (4WD) 15-12
Rear Differential
  Troubleshooting 15-13
Maintenance
  Differential Oil 15-14
Rear Differential Assembly
  Removal/Installation 15-15
  Illustrated Index 15-17
Rear Differential Carrier
  Oil Leak Repair 15-18
Oil Seal
  Replacement 15-19
Rear Differential
  Disassembly 15-20
  Reassembly 15-22

Outline of Model Change

The rear differential assembly has been changed.

Service Precautions (4WD)

This 4-wheel drive model is not equipped with the system that mechanically shifts the drive system to the 2-wheel drive.

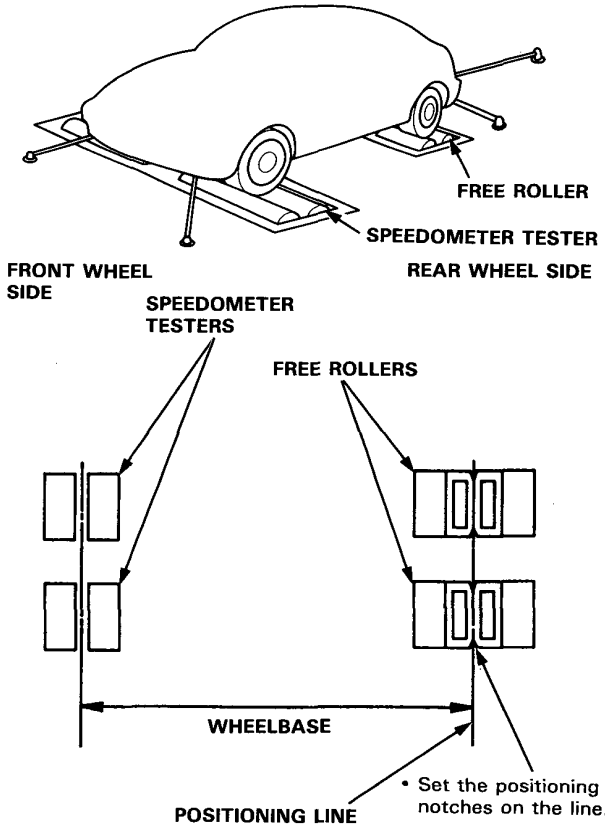
Therefore, perform the speedometer test by using the free rollers.

Tip on use of free roller:

- Test cannot be made by using the chassis dynamometer.
- Do not operate the accelerator pedal, clutch, brake system and steering wheel quickly. The car can roll hard or dash out during the test which is very dangerous.
- Do not raise the speed more than 50 km/h.
- Do not use the free rollers continuously for more than 3 minutes at one try.
- Secure the car for safety. Attach the ropes to the car not to allow it to roll or dash out during the test. (Use the free rollers for the rear wheels)

1. Set each of the free rollers at the wheelbase and track of the car.

   NOTE: Be sure that the free rollers and speedometer tester rollers are set parallel with each other.



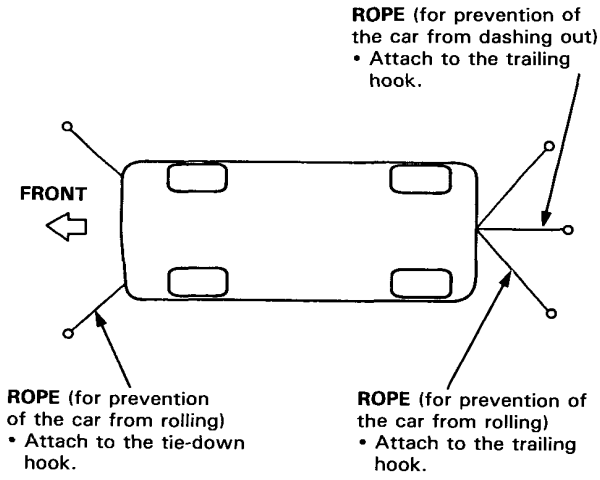
2. Move the car to set the front wheels on the speedometer testers and the rear wheels on the free rollers. Be sure that the wheels are set at the center of the speedometer testers and free rollers respectively.

   CAUTION: Be sure that the front and rear wheels are set at the center of the speedometer tester and free rollers securely, or the car can roll hard or dash out during the test, which is very dangerous.

3. Attach the ropes to the trailing hook and tie-down hooks to secure the car (For prevention of the car from rolling hard or dashing out during the test).

   CAUTION:

   - **Be sure that the ropes attached to the car for prevention of rolling are not slack. Slack ropes do not effectively secure the car and the car can roll during the test.**
   - **Attach the ropes to the car not to interfere with the bumper.**
   - **Do not attach the ropes to any section other than the specified section.**

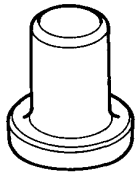

ROPE (for prevention of the car from dashing out)
• Attach to the trailing hook.
FRONT
ROPE (for prevention of the car from rolling)
• Attach to the tie-down hook.
ROPE (for prevention of the car from rolling)
• Attach to the trailing hook.

4. Start the engine. With the gearshift lever in the 3rd range on the manual transmission car or the gearshift lever in the D1 or D2 position on the automatic transmission car, start the car and raise the speed gradually.

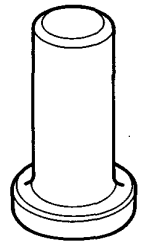
   CAUTION: Take care not to exceed 50 km/h of speed and do not test for more than 3 minutes continuously.

5. After the test, slow down the car until it stops by applying the brake gradually.

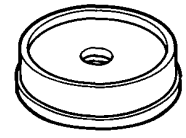
Ref. No.	Tool Number	Description	Qty.	Page Reference
①	07GAD – PH70201	Oil Seal Driver	1	15-19
②	07JAD – PL90100	Oil Seal Driver	1	15-20
③	07NAD – PX40100	Outer Driver, 78 x 80 mm	1	15-19
④	07PAB – 0020000	Companion Flange Holder	1	15-21, 23
⑤	07749 – 0010000	Outer Handle A	1	15-19



①

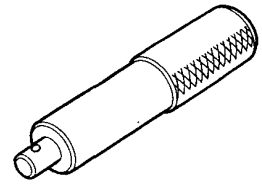


②



③

④



⑤

Description

Realtime 4WD-Dual Pump System

Cars equipped with the Realtime 4WD-Dual Pump System have in addition to the differential system a hydraulic clutch in the rear differential assembly. Under normal conditions, the car is driven by the front wheels, but in response to changes in the front wheel driving force or road conditions, the system momentarily provides the optimal driving force to the rear wheels without the driver having to change from front wheel drive to 4WD.

The system has been integrated into the rear differential to make it compact and light-weight.

When braking during forward driving, the dual pump system will cut power to the rear wheels, to allow the anti-lock brake system (ABS) to operate.

Components and their Function

- The Differential assembly consists of the differential, hypoid gear set (hypoid drive pinion gear and hypoid ring gear), oil pump body, and differential clutch assembly built into the torque control differential case, differential carrier and differential carrier cover.
- The oil pump body contains the front oil pump, rear oil pump, hydraulic control system, and clutch piston.
- The piston spring (a disc spring) is installed inside the clutch piston, and provides a preset torque continuously to the differential clutch assembly to prevent abnormal sounds.
- The driving force from the transfer is transmitted to the differential clutch assembly's clutch guide which is connected to the propeller shaft via the companion flange.
- The clutch guide rotates the clutch plates and the front oil pump in the oil pump body.
- The clutch discs of the differential clutch assembly are fixed to the clutch hub which engages with the splined section of the hypoid drive pinion gear shaft.
- The hypoid drive pinion gear drives the rear oil pump.
- The front oil pump and the rear oil pump are trochoid type pumps which reverse the inlet port and discharge oil port when rotating in the reverse direction.
- ATF is used for the differential oil.

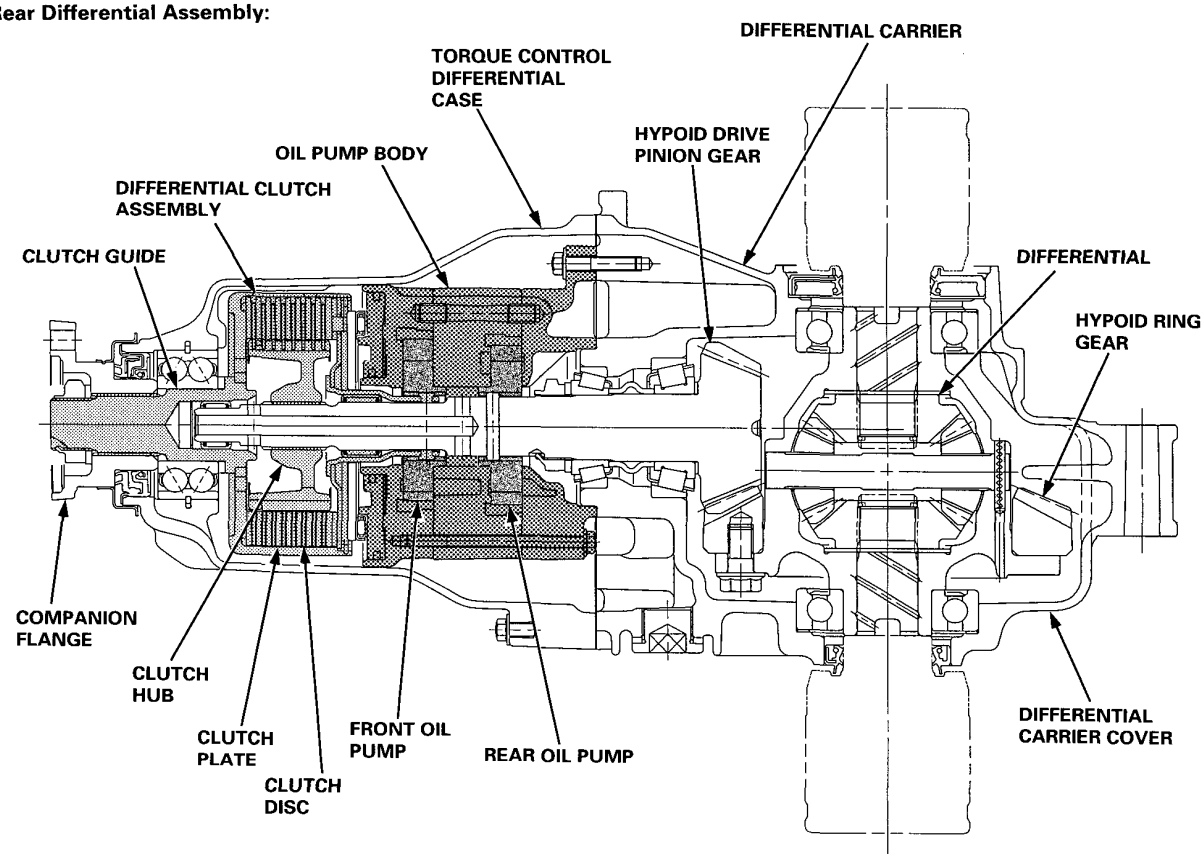
Operation

When there is a difference in speed between the front wheels (clutch guide) and the rear wheels (hypoid drive pinion gear), the hydraulic clutch is engaged by the hydraulic pressure produced by the front and rear oil pumps, transmitting the driving force from the transfer to the rear wheels.

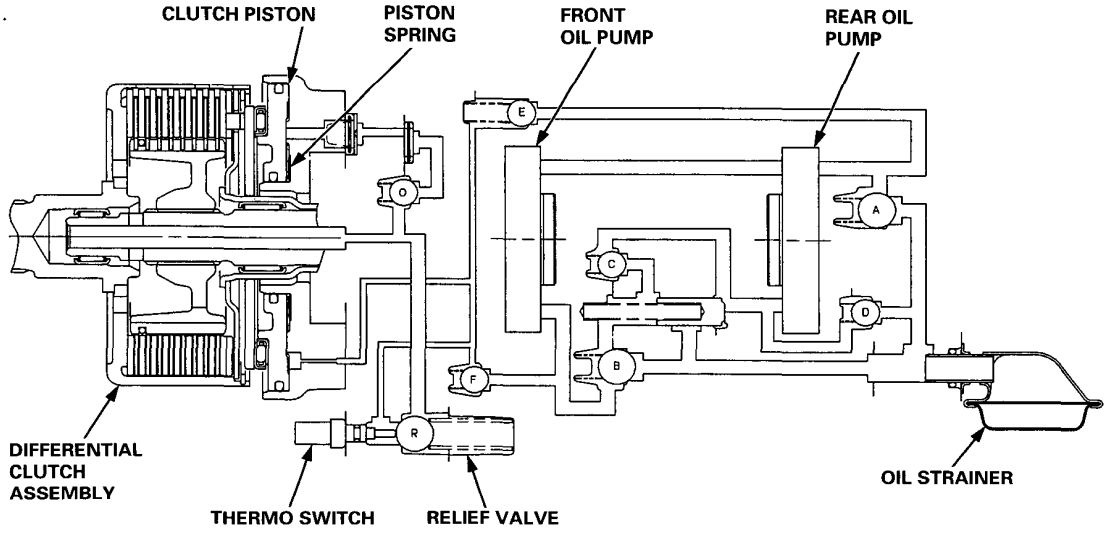
The hydraulic control system in the oil pump body provides the driving force to all four wheels when the car starts in forward or reverse gear, that is, when there is a difference in speed between the front and rear wheels, or when the brake is applied during driving in reverse gear. When the car is running normally in forward or reverse gear, that is, when there is no difference in speed between the front and rear wheels, or when the brake is applied during forward driving, the hydraulic control system transmits the driving force to the front wheels.

To protect the 4WD system when the differential oil temperature rises excessively, the thermo switch releases the system by releasing the hydraulic pressure applied on the clutch piston.

Rear Differential Assembly:



Hydraulic Control System:



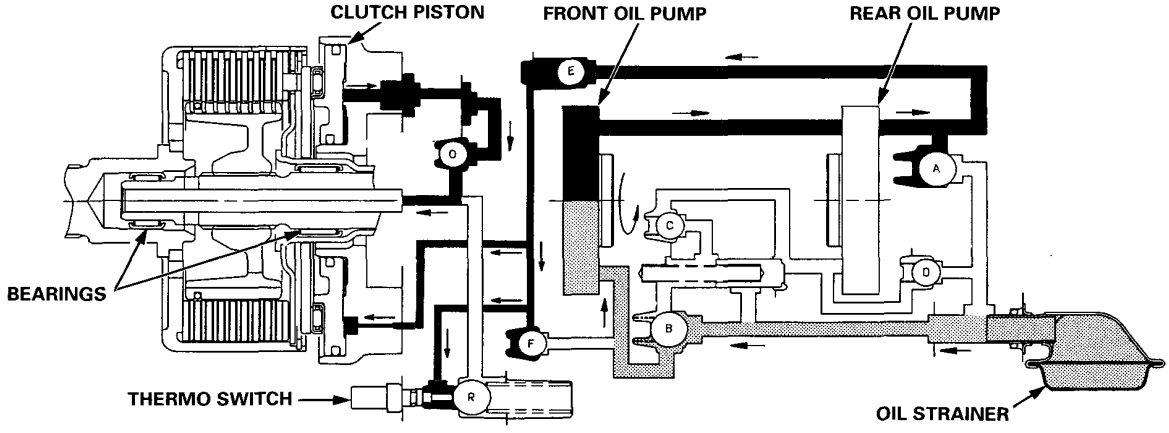
(cont'd)

Description

Realtime 4WD-Dual Pump System (cont'd)

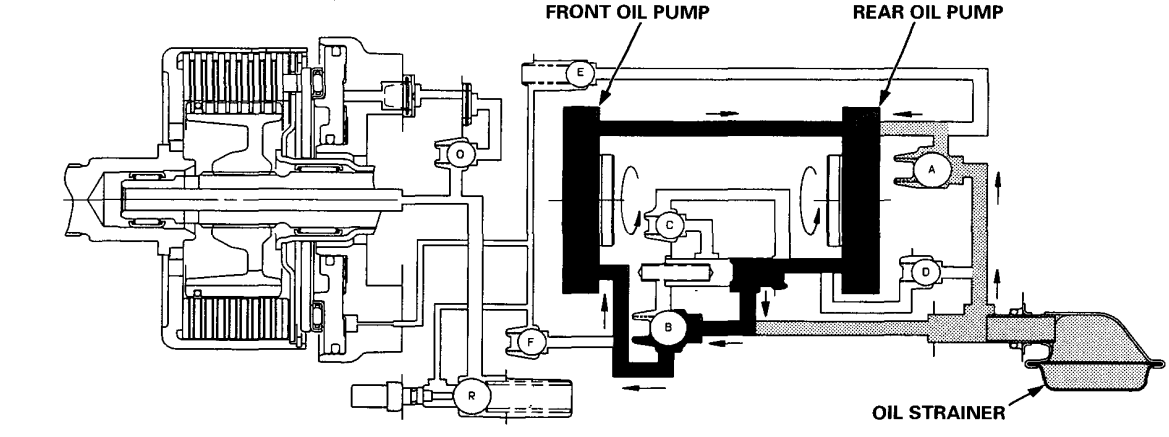
Forward Drive Quick Starting (4WD):
(Front wheel speed is higher than the rear wheel speed.)

- As at forward quick starting the front wheel speed is higher than the rear wheel speed, the rotation speed of the front oil pump is higher than the rear oil pump speed, producing hydraulic pressure.
- The oil is drawn out of the oil strainer by the front oil pump. Then, the oil passes through check valve Ⓑ and is pressured by the front oil pump.
- The pressured oil passes through the rear oil pump and check valve Ⓔ, and it is directed to the clutch piston to move the piston.
- As the clutch piston moves, the clutch plates engage with the clutch discs in the differential clutch assembly to transmit the driving force from the transfer to the rear wheels, that is, the car is switched to the 4WD condition.
- The oil applied on the clutch piston passes through the oil filter, orifice, and check valve Ⓞ to lubricate and cool the bearings inside the clutch guide and the clutch discs.



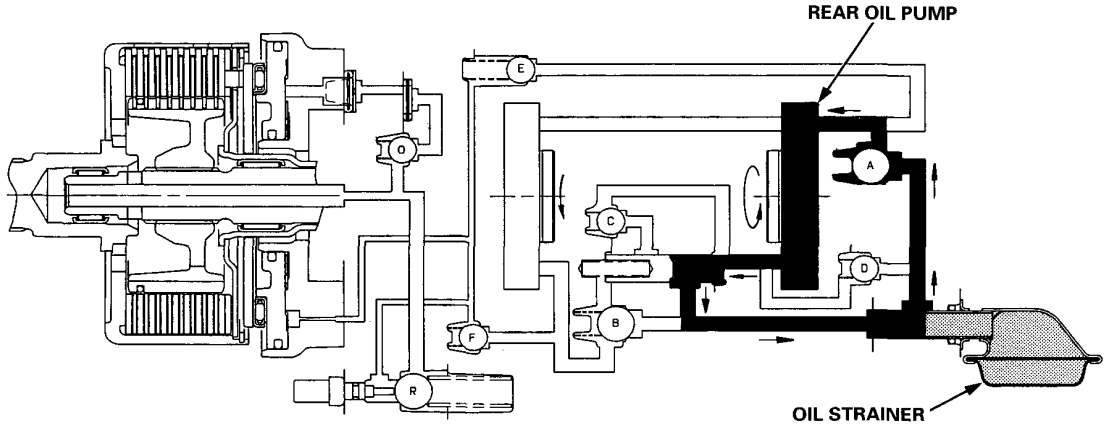
Normal Forward Driving (2WD):
(Front wheel speed and rear wheel speed are equal.)

- As during normal forward driving the front wheel speed is equal with the rear wheel speed, there is no difference in speed between the front rear oil pumps, and they produce equal hydraulic pressure.
- The oil is drawn out of the oil strainer by the front and rear oil pumps, passes then through check valves Ⓐ and Ⓑ, and is pressured by the respective oil pumps.
- The oil pressured by the front oil pump enters the inlet port of the rear oil pump, while the oil pressured by the rear oil pump enters the inlet port of the front oil pump.
- The oil pressured by the front oil pump and rear oil pump circulates between the oil pumps. Therefore, the hydraulic pressure is not applied on the clutch piston, and the driving force is not directed to the rear wheels, that is, the car is in 2WD condition.



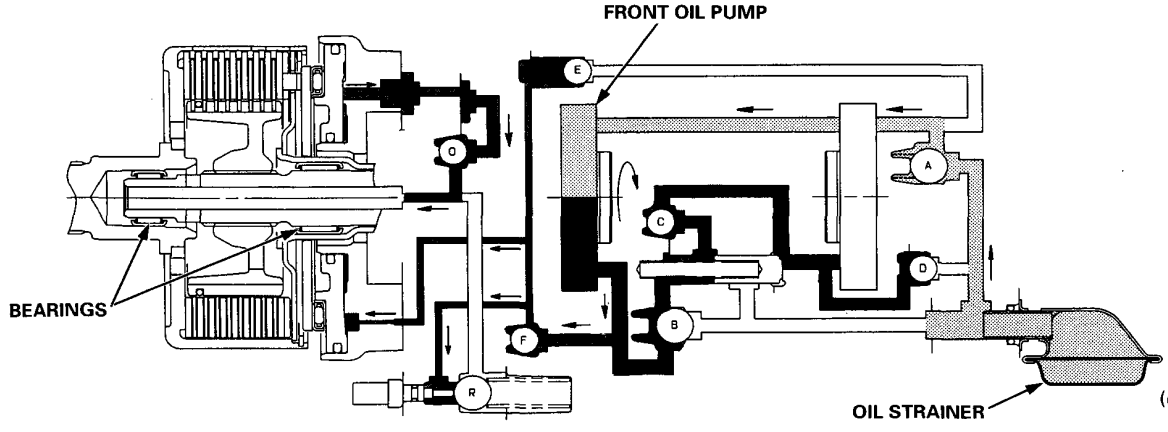
Forward Drive Quick Braking (2WD):
(Rear wheel speed is higher than the front wheel speed.)

- When quick-braking in forward gear, the hydraulic pressure is produced by the rear oil pump as the rear wheel speed is higher than the front wheel speed due to the brake characteristics.
- The oil is drawn out of the strainer by the rear oil pump, passes then through check valve Ⓐ, and is pressured by the rear oil pump.
- As the pressured oil is directed to the inlet port of the rear oil pump, it is drawn into the rear oil pump again.
- The pressured oil simply circulates through the rear oil pump. Therefore, no hydraulic pressure is applied on the clutch piston, and the driving force is not transmitted to the rear wheels, that is, the car is in 2WD condition.



Reverse Drive Quick Starting (4WD):
(Front wheel speed is higher than the rear wheel speed.)

- When quick-starting in reverse gear, the hydraulic pressure is produced by the front oil pump as the front wheel speed is higher than the rear wheel speed.
- The front oil pump rotates in the reverse direction to that of when starting the car in forward gear. The oil is drawn out of the oil strainer by the front oil pump, passes then through check valve Ⓐ, and is pressured by the front oil pump.
- The pressured oil passes through check valve Ⓕ, and it is directed to the clutch piston to move the piston.
- As the clutch piston moves, the clutch plates engage with the clutch discs in the clutch assembly to transmit the driving force from the transfer to the rear wheels, that is, the car is switched to 4WD.
- The oil applied on the clutch piston passes through the oil filter, orifice, and check valve Ⓞ to lubricate and cool the bearings inside the clutch guide and the clutch discs.

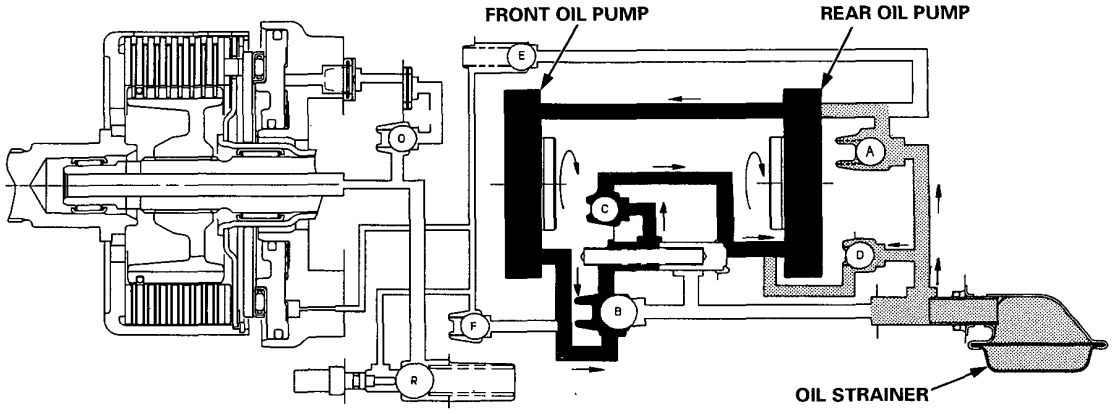


(cont'd)

Realtime 4WD-Dual Pump System (cont'd)

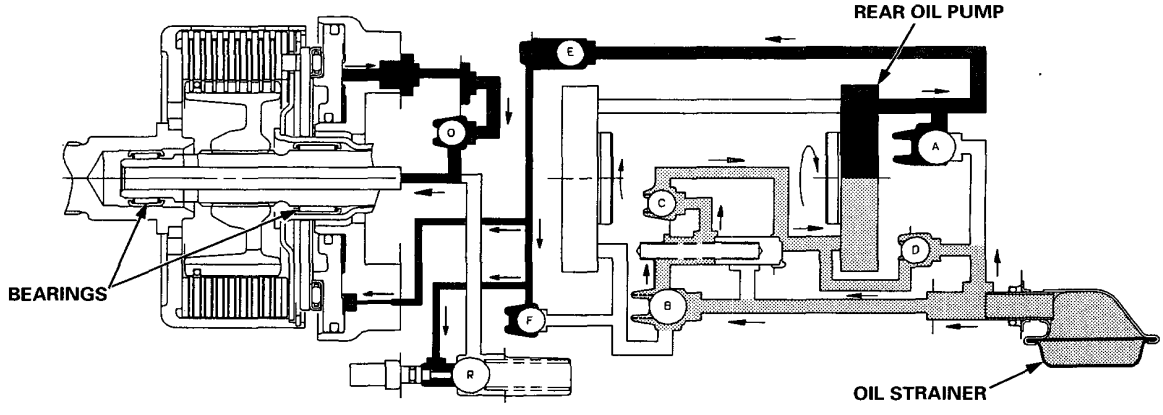
Normal Reverse Driving (2WD):
(Front wheel speed and rear wheel speed are equal.)

- As the front wheel speed is equal to the rear wheel speed during normal reverse driving, there is no difference in speed between the front and rear oil pumps, and they are producing the equal hydraulic pressure.
- The oil pumps rotate in the reverse direction to that of when driving the car in forward gear. The oil is drawn out of the oil strainer by the front and rear oil pumps, passes then through check valves Ⓐ and Ⓓ, and is pressured by the respective oil pumps.
- The oil pressured by the front oil pump enters the inlet port of the rear oil pump, while the oil pressured by the rear oil pump enters the inlet port of the front oil pump.
- The oil pressured by the front oil pump and rear oil pump circulates between the oil pumps. Therefore, the hydraulic pressure is not applied on the clutch piston, and the driving force is not directed to the rear wheels, that is, the car is in 2WD condition.



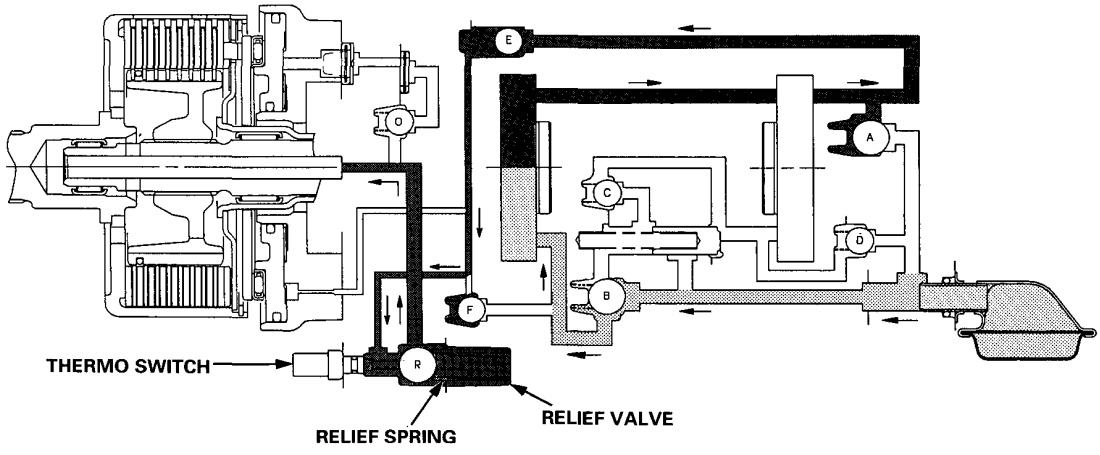
Reverse Drive Quick Braking (4WD):
(Rear wheel speed is higher than the front wheel speed.)

- When quick-braking during reverse driving, the hydraulic pressure is produced by the rear oil pump as the rear wheel speed is higher than the front wheel speed due to the brake characteristics.
- The oil pump rotates in the reverse direction to that of when the car is running in forward gear. The oil is drawn out of the strainer by the rear oil pump, passes then through check valves Ⓓ, Ⓑ, and Ⓒ, and is pressured by the rear oil pump.
- The pressured oil passes through check valve Ⓔ, and it is directed to the clutch piston to move the piston.
- As the clutch piston moves, the clutch plates engage with the clutch discs in the clutch assembly to transmit the driving force from the transfer to the rear wheels, that is , the car is switched to 4WD.
- The oil applied on the clutch piston passes through the oil filter, orifice, and check valve Ⓞ to lubricate and cool the bearings inside the clutch guide and the clutch discs.



Thermo Switch Activation (2WD):

- When the car is in 4WD, the pressured oil passes through check valve Ⓔ, and is directed to the thermo switch and the clutch piston.
- When the differential oil temperature rises excessively, the thermo switch pushes open check valve Ⓡ of the relief valve; this releases the hydraulic pressure applied on the clutch piston and, thereby, releases the 4WD.



Relief Valve Activation (2WD):

When hydraulic pressure higher than the relief spring load is produced at the thermo switch side and applied on check valve Ⓡ, the relief valve regulates the hydraulic pressure applied on the clutch piston to a given pressure; this prevents the excessive torque from being transmitted to the rear wheel drive system.

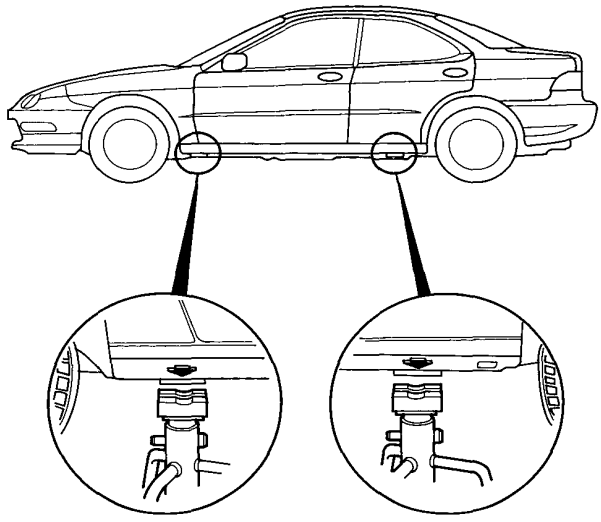
Realtime 4WD-Dual Pump System Troubleshooting

Forward Drive Quick Starting (4WD)

M/T:

1. Raise the car off the ground and place safety stands under it (see section 1).

⚠ WARNING
- **Make sure jacks and safety stands are placed properly.**
- **Make sure the car will not roll off stands and fall while you are working under it.**



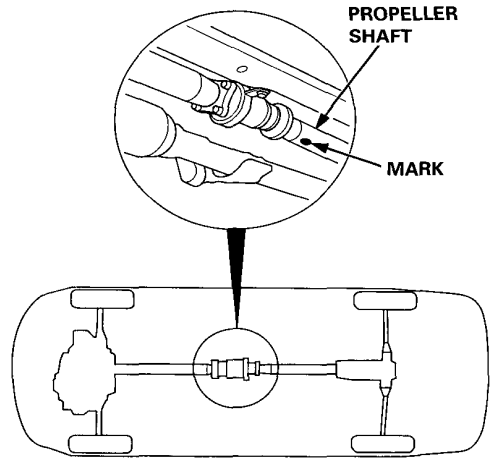
2. Start the engine. Hold the engine at 3,000 rpm with no load in neutral until the radiator fan comes on, then let it idle.
3. Shift the lever into low gear, and gradually release the clutch.
4. Apply the parking brake firmly.
   - If the engine stalls, the system is OK.
   - If the engine continues to run, check the differential oil; if the oil is OK, replace the rear differential assembly.

A/T:

1. Raise the car off the ground and place safety stands under it (see section 1).

⚠ WARNING
- **Make sure jacks and safety stands are placed properly.**
- **Make sure the car will not roll off stands and fall while you are working under it.**

2. Mark either the No. 1 or No. 2 propeller shaft.



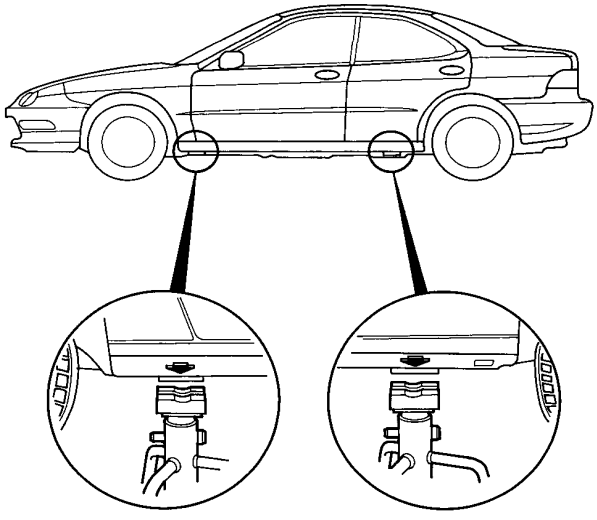
3. Start the engine. Hold the engine at 3,000 rpm with no load in [N] or [P] position until the radiator fan comes on, then let it idle.
4. Fix the engine speed at low gear by moving the select lever to the [2] position and pressing the LOW switch.
5. Apply the parking brake firmly, and measure the time during which the marked propeller shaft rotates 10 times.
   - If the time for 10 turns is 10 seconds or more, the system is OK.
   - If the time for 10 turns is less than 10 seconds, check the differential oil; if the oil is OK, replace the rear differential assembly.

Reverse Drive Quick Starting (4WD)

M/T:

1. Raise the car off the ground and place safety stands under it (see section 1).

⚠ WARNING
- **Make sure jacks and safety stands are placed properly.**
- **Make sure the car will not roll off stands and fall while you are working under it.**



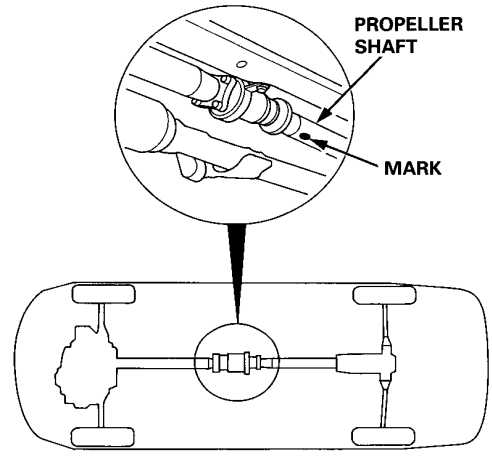
2. Start the engine. Hold the engine at 3,000 rpm with no load in neutral until the radiator fan comes on, then let it idle.
3. Shift the lever into reverse gear, and gradually release the clutch.
4. Apply the parking brake firmly.
   - If the engine stalls, the system is OK.
   - If the engine continues to run, check the differential oil; if the oil is OK, replace the rear differential assembly.

A/T:

1. Raise the car off the ground and place safety stands under it (see section 1).

⚠ WARNING
- **Make sure jacks and safety stands are placed properly.**
- **Make sure the car will not roll off stands and fall while you are working under it.**

2. Mark either the No. 1 or No. 2 propeller shaft.

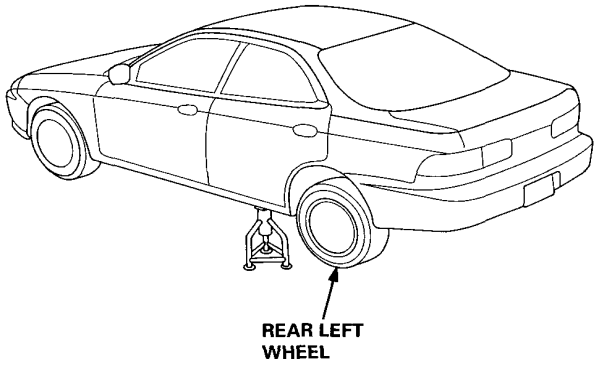


3. Start the engine. Hold the engine at 3,000 rpm with no load in [N] or [P] position until the radiator fan comes on, then let it idle.
4. Fix the engine speed at low gear by moving the select lever to the [R] position.
5. Apply the parking brake firmly, and measure the time during which the marked propeller shaft rotates 10 times.
   - If the time for 10 turns is 10 seconds or more, the system is OK.
   - If the time for 10 turns is less than 10 seconds, check the differential oil; if the oil is OK, replace the rear differential assembly.

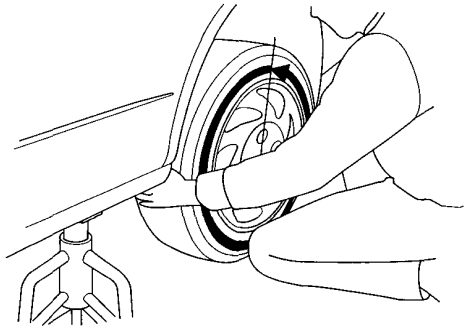
Realtime 4WD-Dual Pump System Troubleshooting

Forward Drive Quick Braking (2WD)

1. Raise the rear left wheel off the ground and place safety stands under the side sill reinforcement section (see section 1).



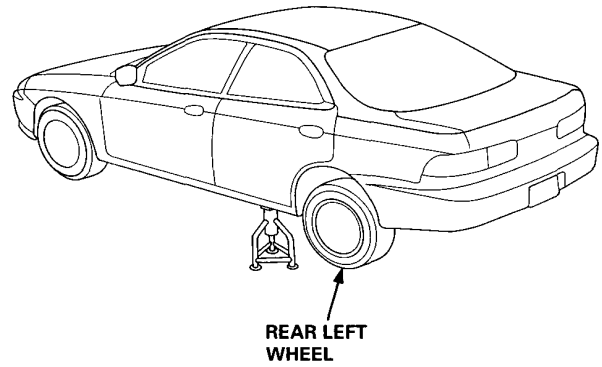
2. Turn the wheel by hand anticlockwise several times.



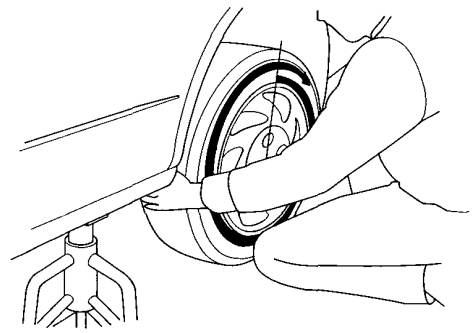
- If the wheel turns easily, the system is OK.
- If the wheel increasingly gets hard to turn, the system is faulty. Check the differential oil, if it is OK, replace the differential assembly.

Reverse Drive Quick Braking (4WD)

1. Raise the rear left wheel off the ground and place safety stands under the side sill reinforcement section (see section 1).



2. Turn the wheel by hand clockwise several times.



- If the wheel increasingly gets hand to turn, the system is OK.
- If the wheel turn easily, the system is faulty. Check the differential oil, if it is OK, replace the differential assembly.

Troubleshooting

CAUTION: Most problems in the unit are to be diagnosed by identifying noises from the gears or bearings. Care should be taken during diagnosis not to confuse the differential noises with those from other drive train components.

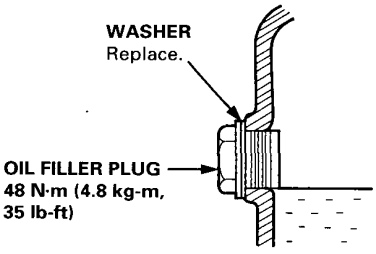
Symptom	Probable Cause	Remedy
Do not 4WD	• Lack of oil • Use of other oil than specified	• Replenish oil • Replace
Do not 2WD (ABS malfunction)	• Lack of oil • Use of other oil than specified	• Replenish oil • Replace
Consistent noise or abnormal noise	• Lack of oil • Use of other oil than specified	• Replenish oil • Replace
Overheating	• Lack of oil • Use of other oil than specified	• Replenish oil • Replace
Oil Leak	• Oil level too high • Clogged breather hole • Worn or damaged oil seal • Inadequate sealing • Damaged sealing washer • Loose differential carrier mounting bolts	• Lower to proper level • Clean • Replace • Replace • Replace • Recheck torque

Differential Oil

NOTE: Check the oil with the engine OFF, and the car on level ground.

Oil Level Check:

1. Remove the oil filler plug, then check the oil level.
2. The oil level must be up to the filler hole. If it is below the hole, add oil until it runs out, then reinstall the new washer and oil filler plug.



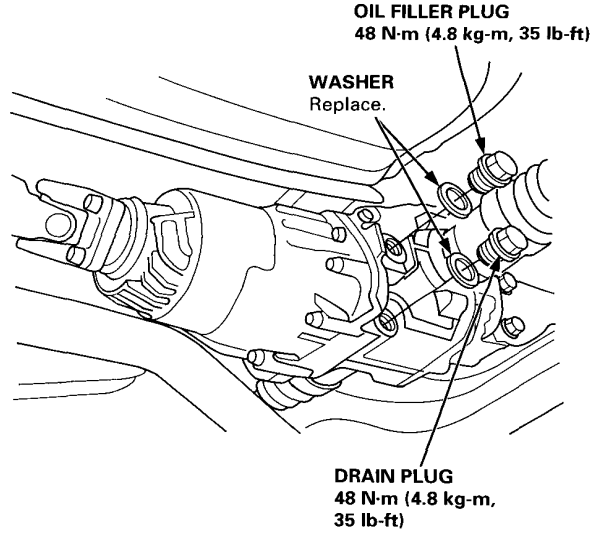
Oil Change:

1. Remove the oil filler plug.
2. Remove the drain plug, and drain the dirty oil.
3. Reinstall the drain plug with a new washer, and refill the differential oil to the proper level.

   NOTE: Drain plug and oil filler plug washers should be replaced at every oil change.
4. Reinstall the oil filler plug with a new washer.

Oil Capacity
1.0 ℓ (1.1 US qt, 0.9 Imp qt) at oil change
1.2 ℓ (1.3 US qt, 1.1 Imp qt) at overhaul

Use only HONDA Premium Formula Automatic Transmission Fluid or an equivalent DEXRON® II Automatic Transmission Fluid (ATF).



NOTE: Check the 4WD system function (see page 15-14) and recheck the differential oil level after the differential has been disassembled.

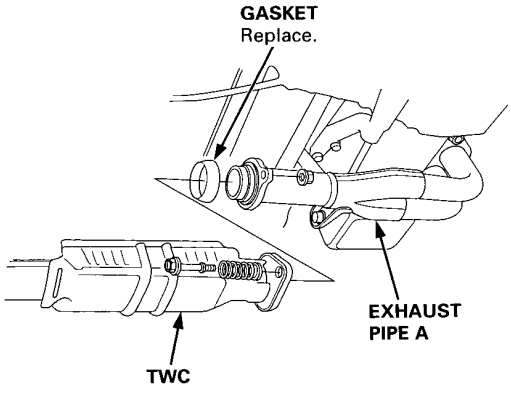
Rear Differential Assembly

Removal/Installation

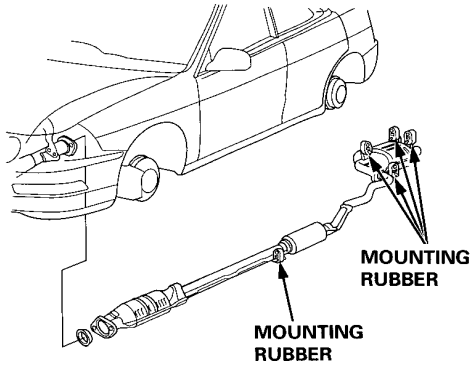
⚠ WARNING

- **Make sure jacks and safety stands are placed properly (see section 1).**
- **Make sure the car will not roll off stands and fall while you are working under it.**

1. Disconnect the exhaust pipe A and three way catalytic converter (TWC).

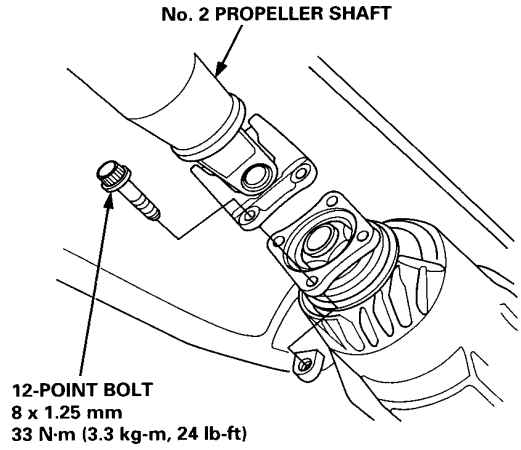


2. Remove the mounting rubbers, then remove the three way catalytic converter (TWC), exhaust pipe B, and muffler assemblies.

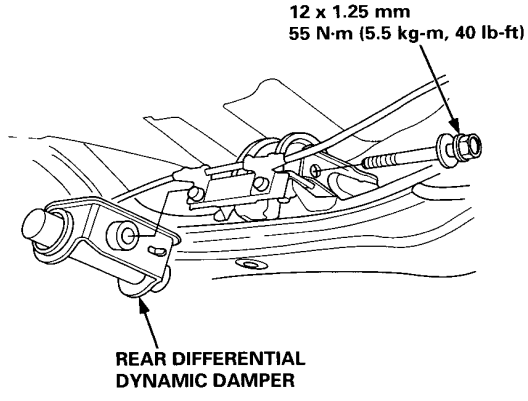


3. Disconnect the No.2 propeller shaft and rear differential.

NOTE: Mark the shaft and companion flange before disconnecting them.



4. Remove the rear differential dynamic damper.



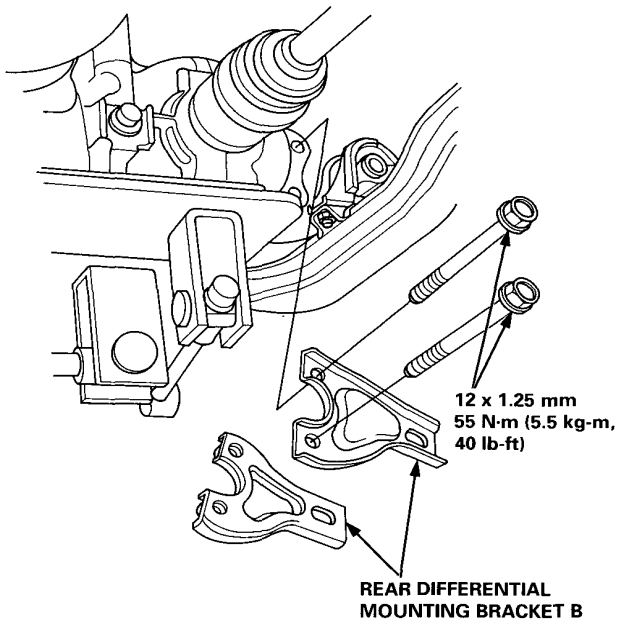
(cont'd)

Rear Differential Assembly

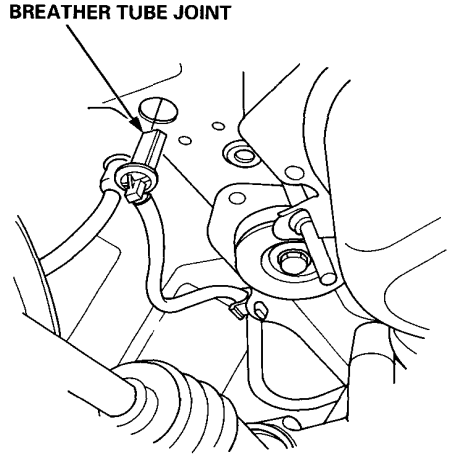
Removal/Installation (cont'd)

5. Place a transmission jack under the rear differential.

6. Remove the right and left rear differential mounting bracket B.

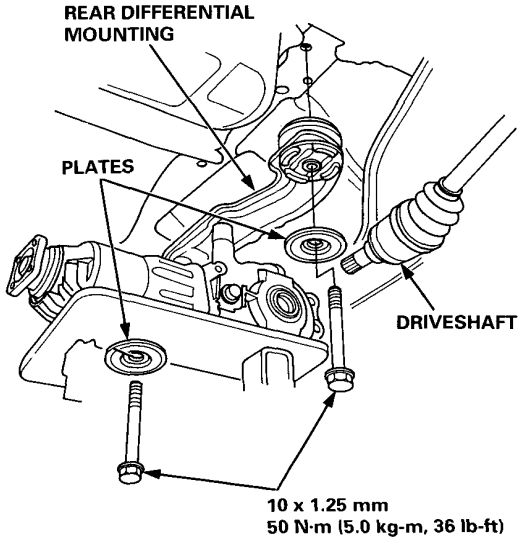


7. Remove the breather tube joint.

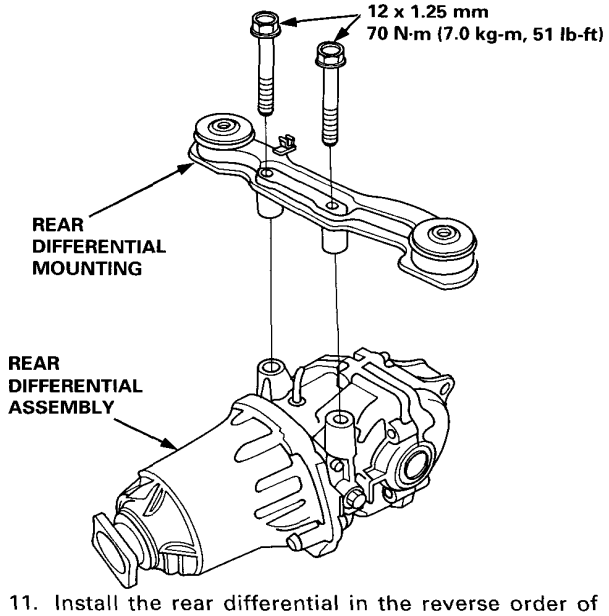


8. Remove the mounting bolts and plates.

9. Lower the rear differential on the transmission jack by pulling the inboard joint and remove the driveshaft from the rear differential case as an assembly (see section 16).



10. Remove the rear differential mount from the rear differential assembly.



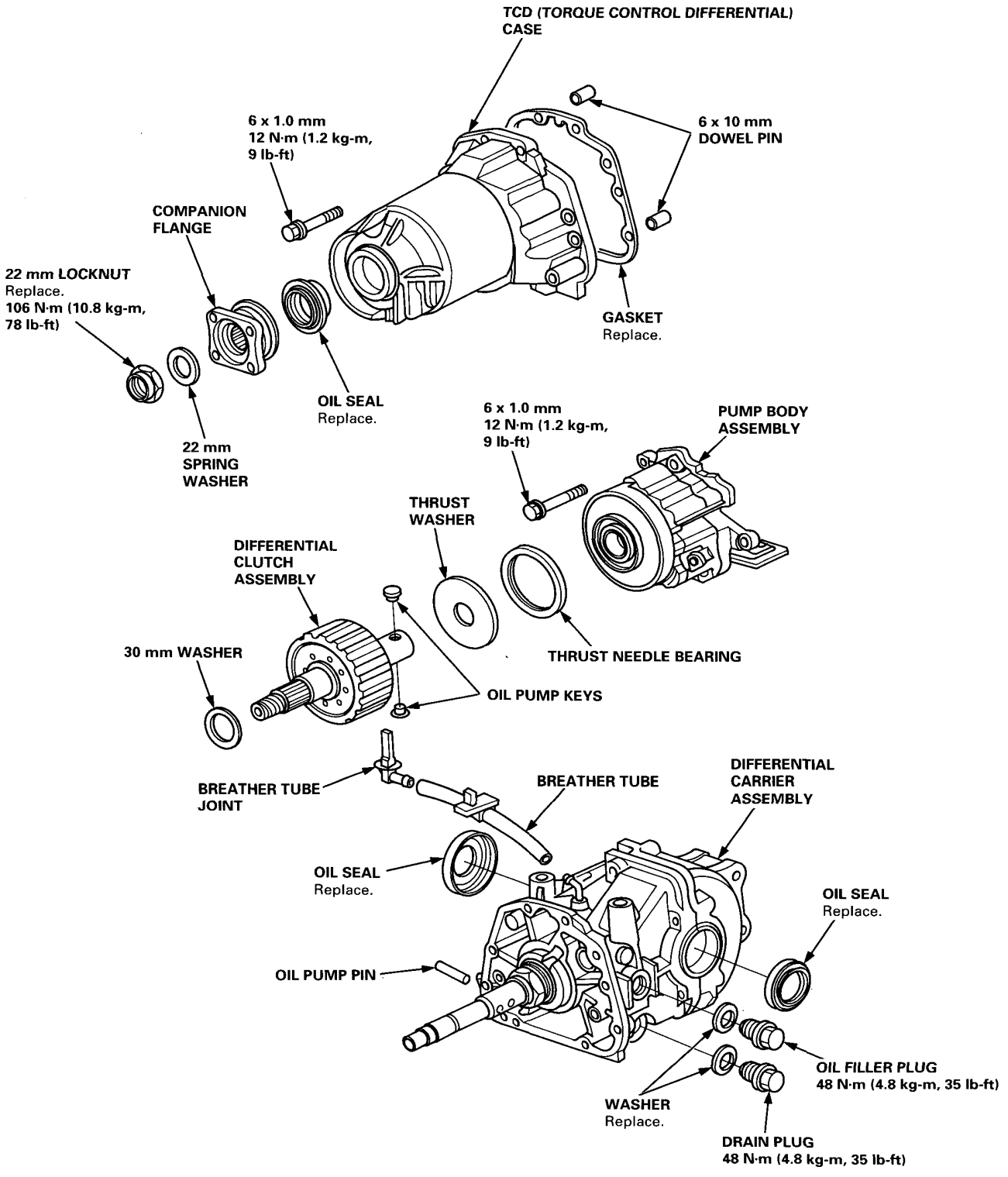
11. Install the rear differential in the reverse order of removal.

NOTE: After installing the rear differential, fill in the specified amount of the ATF (see page 15-14).

Rear Differential Assembly

Illustrated Index

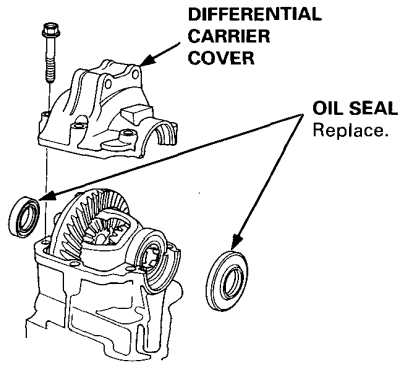
NOTE: Before assembly lubricate all parts with ATF.



Rear Differential Carrier

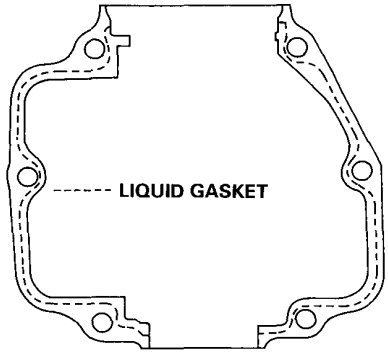
Oil Leak Repair

1. Remove the bolts in a crisscross pattern in several steps.
2. Separate the carrier cover from the rear differential carrier, and wipe it clean of the sealant.

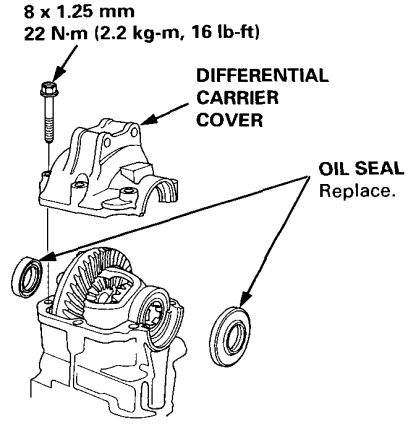


3. Apply liquid gasket to the carrier cover mating surface as shown.

   NOTE:
   - Use liquid gasket (P/N 0Y740 – 99986).
   - Remove the dirty oil from the sealing surface.
   - If 20 minutes have passed after applying liquid gasket, reapply it and assemble the carrier. Allow it to cure at least 30 minutes after assembly before filling the differential with oil.



4. Install the carrier cover, and tighten the bolts in a crisscross pattern in several steps.

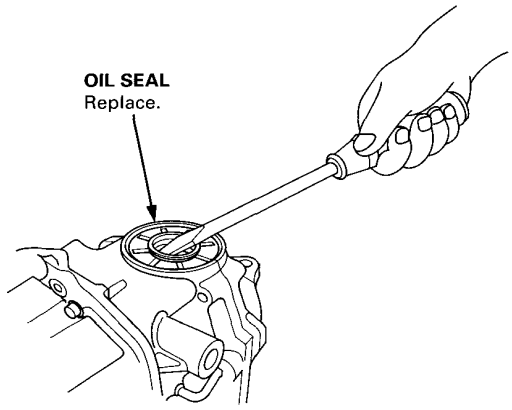


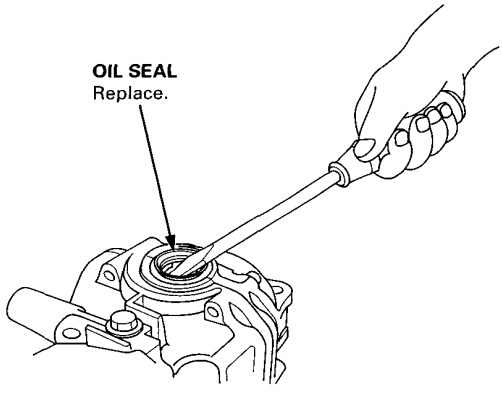
5. Install the oil seals (see page 15-19).

Oil Seal

Replacement

1. Remove the oil seal from the rear differential carrier.

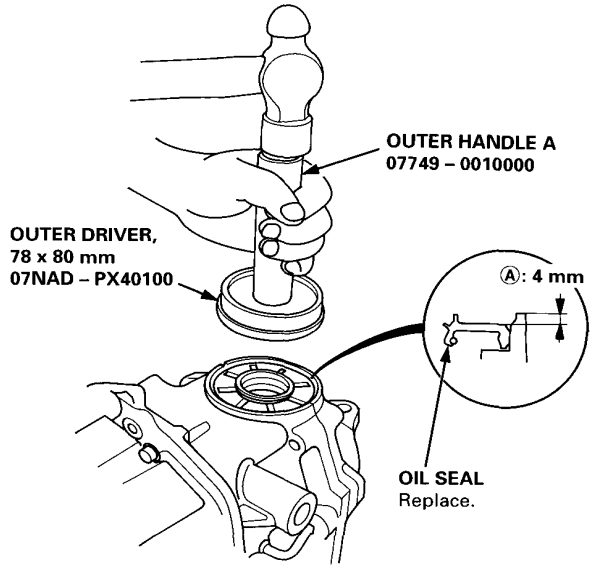




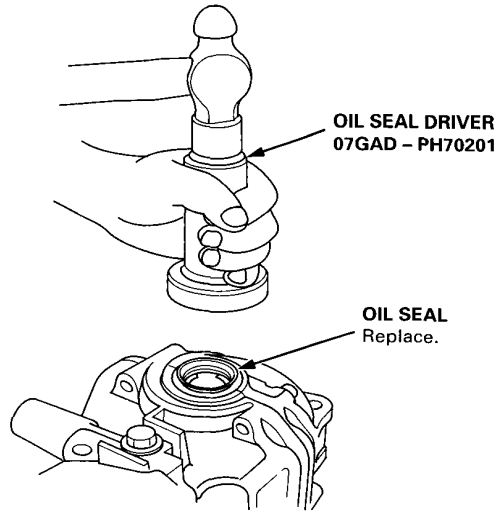
2. Install the oil seal using the special tools as shown.

   NOTE: The oil seal must sit squarely against the case.

   Right side: Make sure that distance Ⓐ is correct.



   Left side: Drive the oil seal in until it is flush with differential case end.

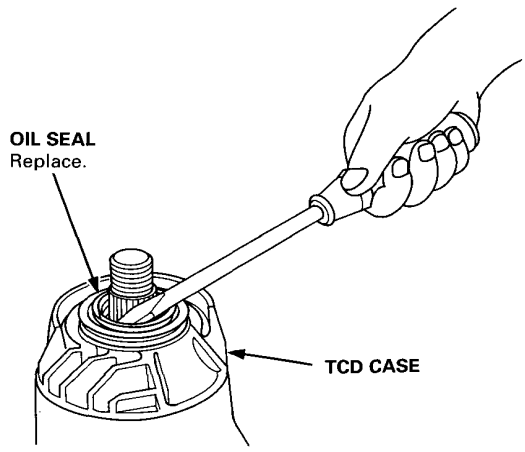


(cont'd)

Oil Seal

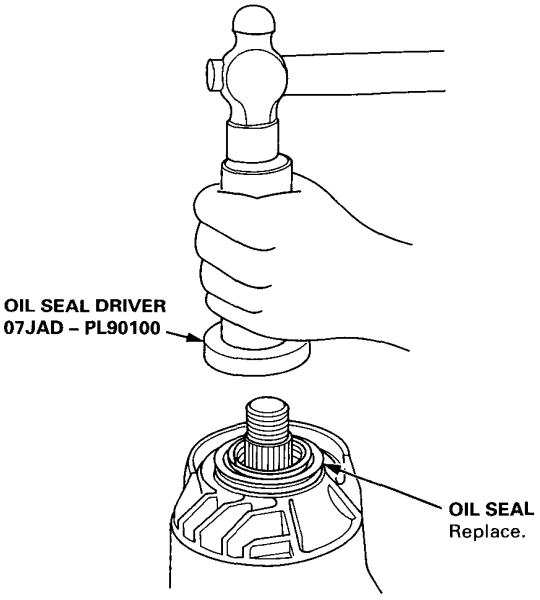
Replacement (cont'd)

3. Remove the oil seal from the TCD (Torque Control Differential) case.



4. Install the oil seal using the special tools as shown.

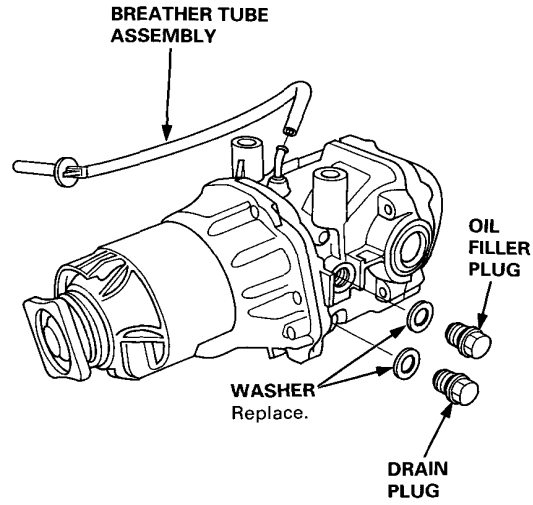
   NOTE: The oil seal must sit squarely against the case.



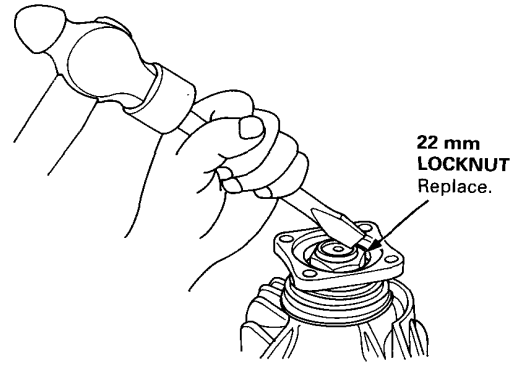
Rear Differential

Disassembly

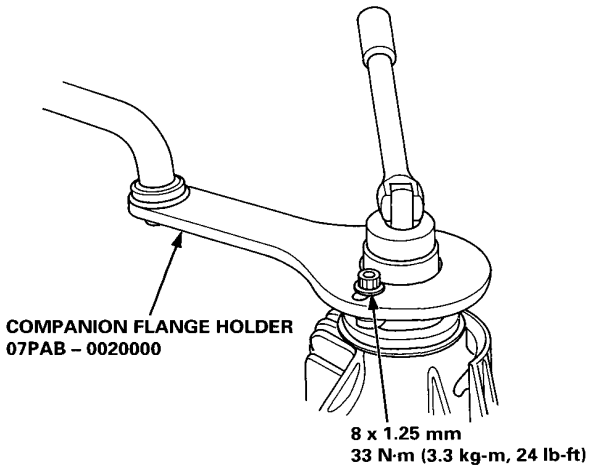
1. Remove the breather tube assembly, drain plug, and oil filler plug.



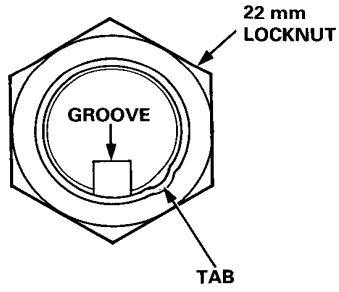
2. Raise the 22 mm locknut tab from the groove of the shaft.



3. Install the special tool as shown.



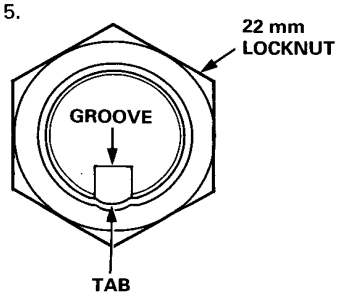
4. Loosen the 22 mm locknut slightly (about 35°) so that the tab moves away from the groove.



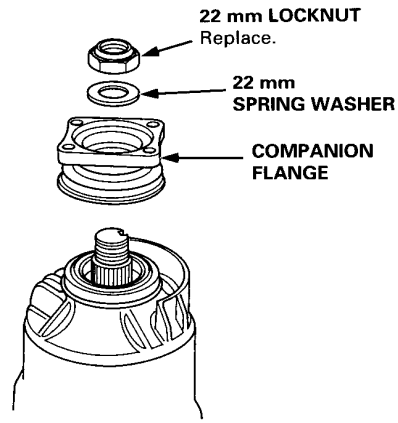
5. Retighten the 22 mm locknut so that the tab returns into the groove.

6. Remove the fragments of the broken locknut from the groove, and loosen the locknut.

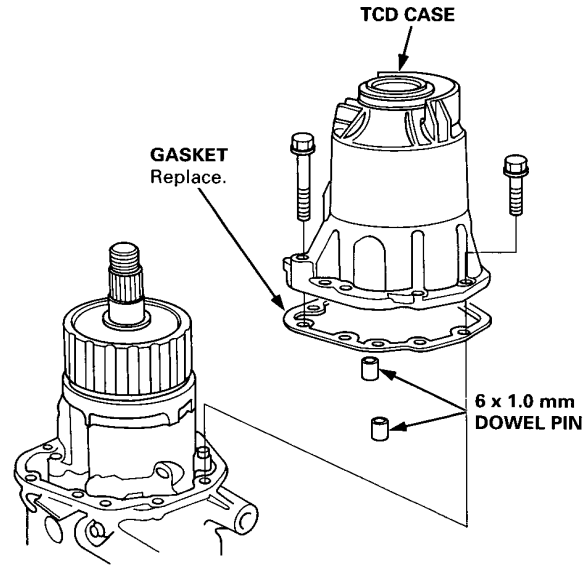
NOTE: If no fragments appear in the groove, repeat steps 4 and 5.



7. Remove the 22 mm locknut, 22 mm spring washer, and companion flange.



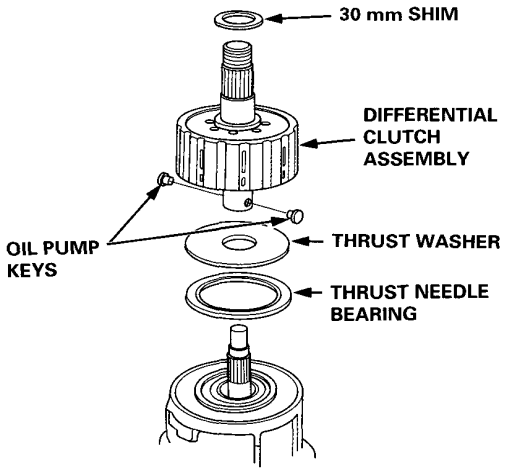
8. Remove the bolts in a crisscross pattern in several steps, then remove the TCD (Torque Control Differential) case, gasket, and 6 x 10 mm dowel pins.



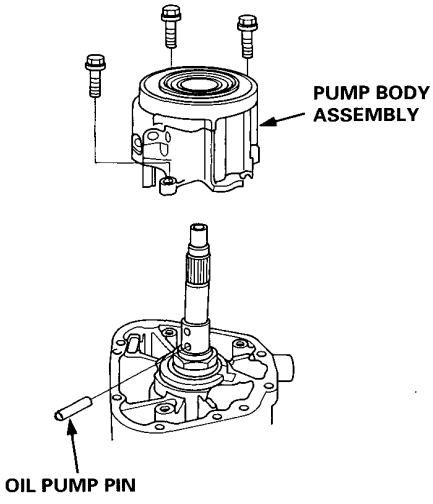
(cont'd)

Disassembly (cont'd)

9. Remove the 30 mm shim, differential clutch assembly, oil pump keys, thrust washer, and thrust needle bearing.



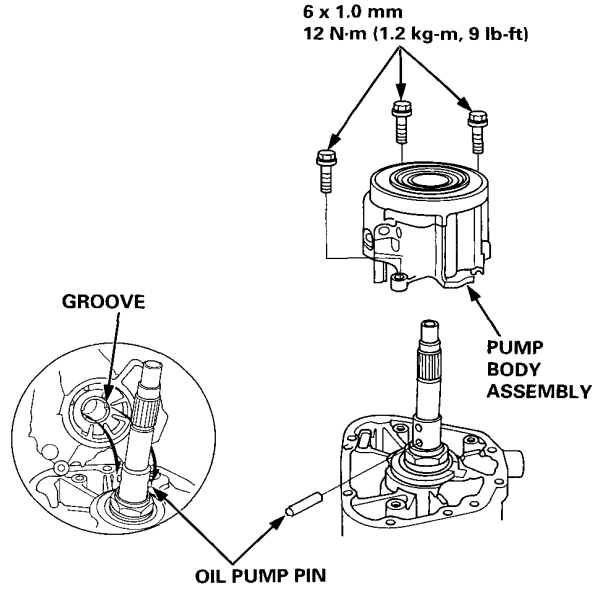
10. Remove the pump body assembly and oil pump pin.



Reassembly

1. Install the oil pump pin and pump body assembly.

   NOTE: Align the oil pump pin and groove of the rear oil pump.

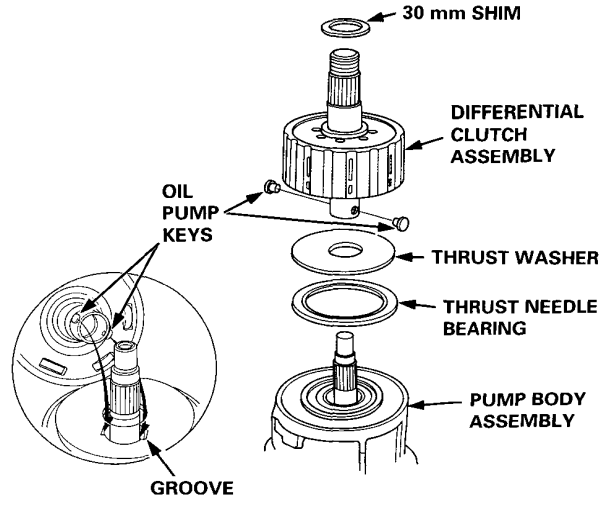


2. Install the thrust needle bearing and thrust washer on the pump body assembly.

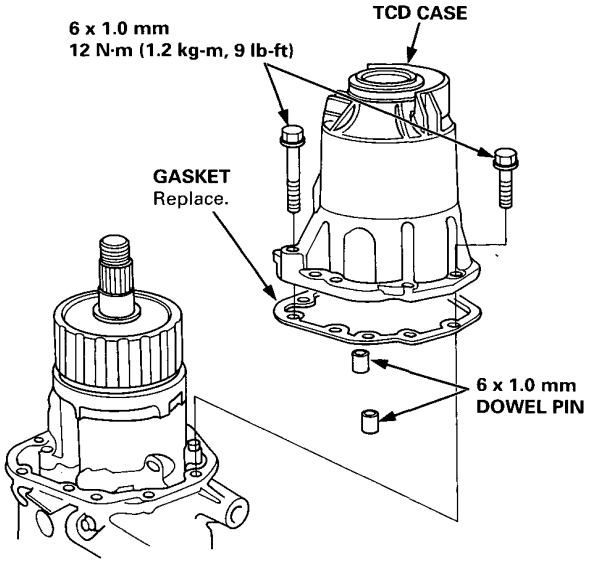
3. Install the oil pump keys on the differential clutch assembly, and install it.

   NOTE: Align the oil pump keys and groove of the front oil pump.

4. Install the 30 mm shim.

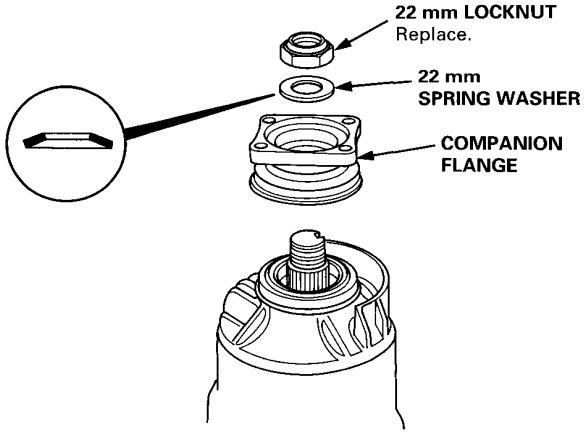


5. Install the 6 x 10 mm dowel pins and gasket, and install the TCD (Torque Control Differential) case.



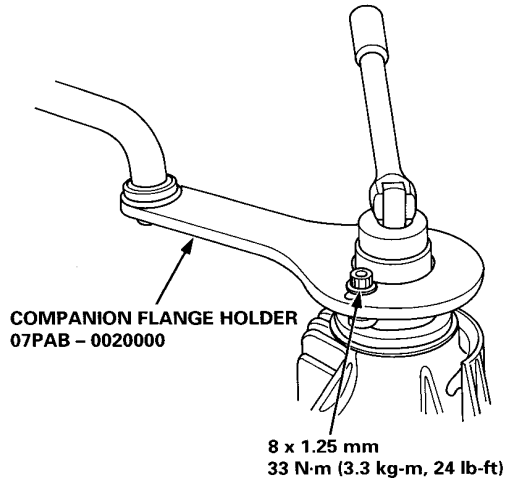
6. Install the companion flange, 22 mm spring washer, and 22 mm locknut.

NOTE: Lubricate the ATF on the threads of the shaft.

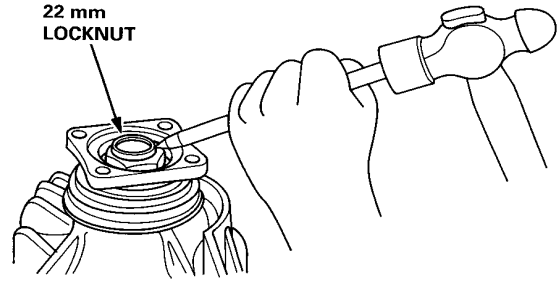


7. Tighten the locknut using the special tool as shown.

Torque: 108 N·m (10.8 kg-m, 79 lb-ft)



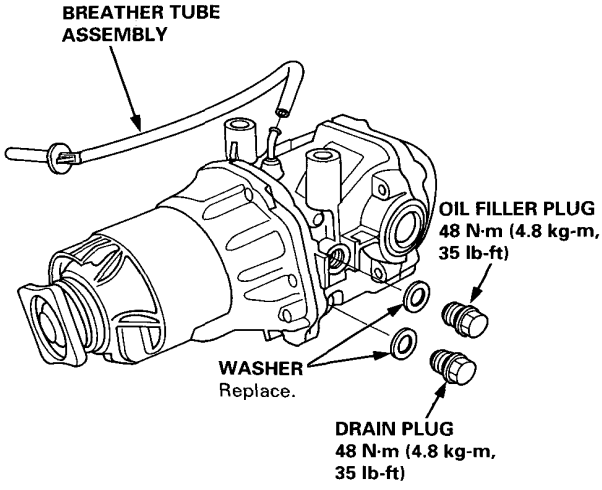
8. Stake the locknut tab into the groove.



(cont'd)

Reassembly

9. Install the drain plug, oil filler plug, and breather tube assembly.



Driveshafts

Special Tools (4WD) 16-2
Rear Driveshafts
- Disassembly 16-3
- Disassembly/Inspection 16-4
- Reassembly 16-5

Propeller Shafts
- Inspection 16-8
- Removal 16-9
- Disassembly 16-10
- Reassembly 16-12
- Installation 16-13

Outline of Model Changes

The rear driveshafts and the propeller shafts for cars with 4WD have been changed.

Special Tools (4WD)

Ref. No.	Tool Number	Description	Qty	Page Reference
①	07PAB – 0020000	Companion Flange Holder	1	16-10, 13

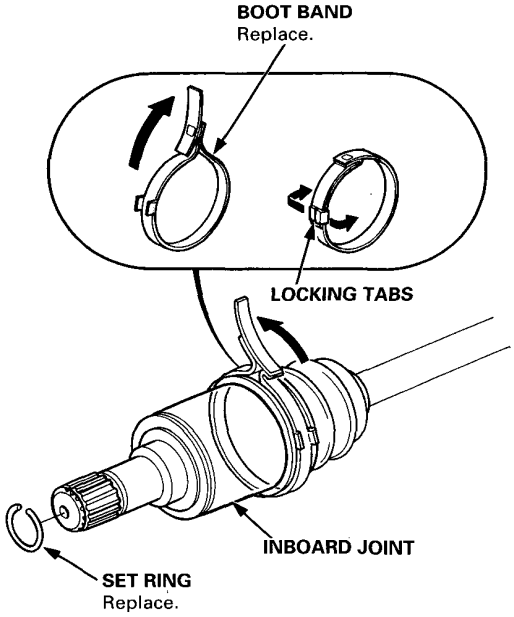
①

Disassembly

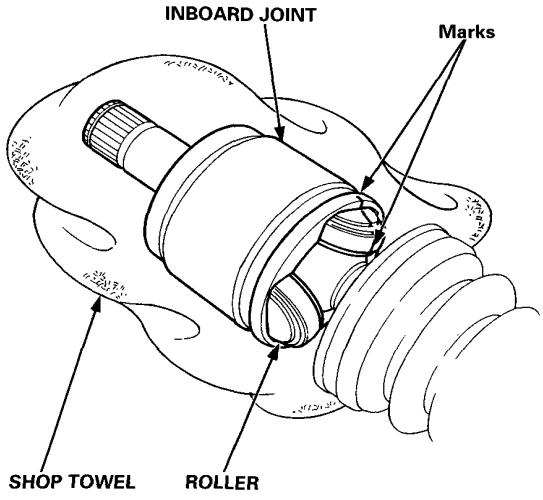
1. Remove the set ring from the inboard joint.
2. To remove the boot band, pry up the locking tabs with a screwdriver and raise the end of the band.

   CAUTION: Take care not to damage the boot.

   NOTE: Carefully clamp the driveshaft in a vise with soft jaws.

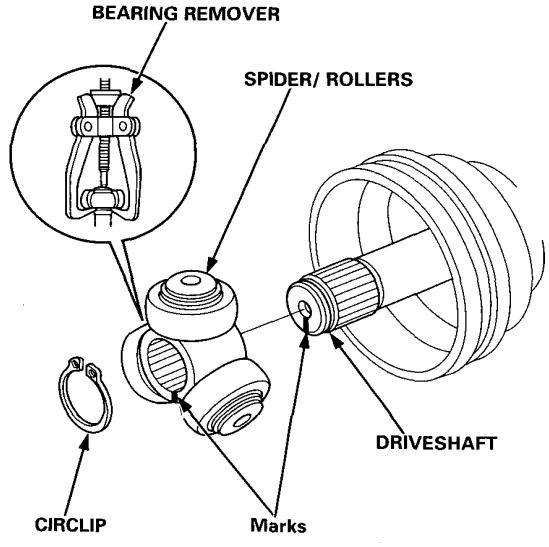


3. Mark each roller and inboard joint to identify the locations of rollers and grooves in the inboard joint. Then remove the inboard joint on the shop towel.



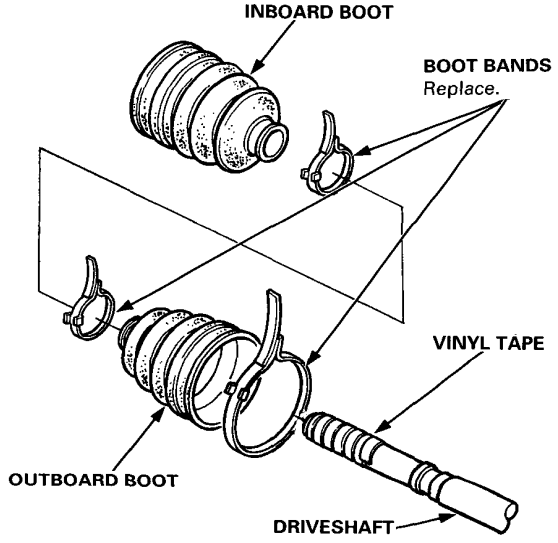
4. Mark the spider/rollers and driveshaft to identify the position of the spider/rollers on the shaft.
5. Remove the circlip.
6. Remove the spider/rollers using a commercially available bearing remover.

   NOTE: Do not disassemble the spider/rollers.



7. Wrap the splines on the driveshaft with vinyl tape to prevent damage to the boots.
8. Remove the boot bands and boots.

   CAUTION: Take care not to damage the boots.



Rear Driveshafts

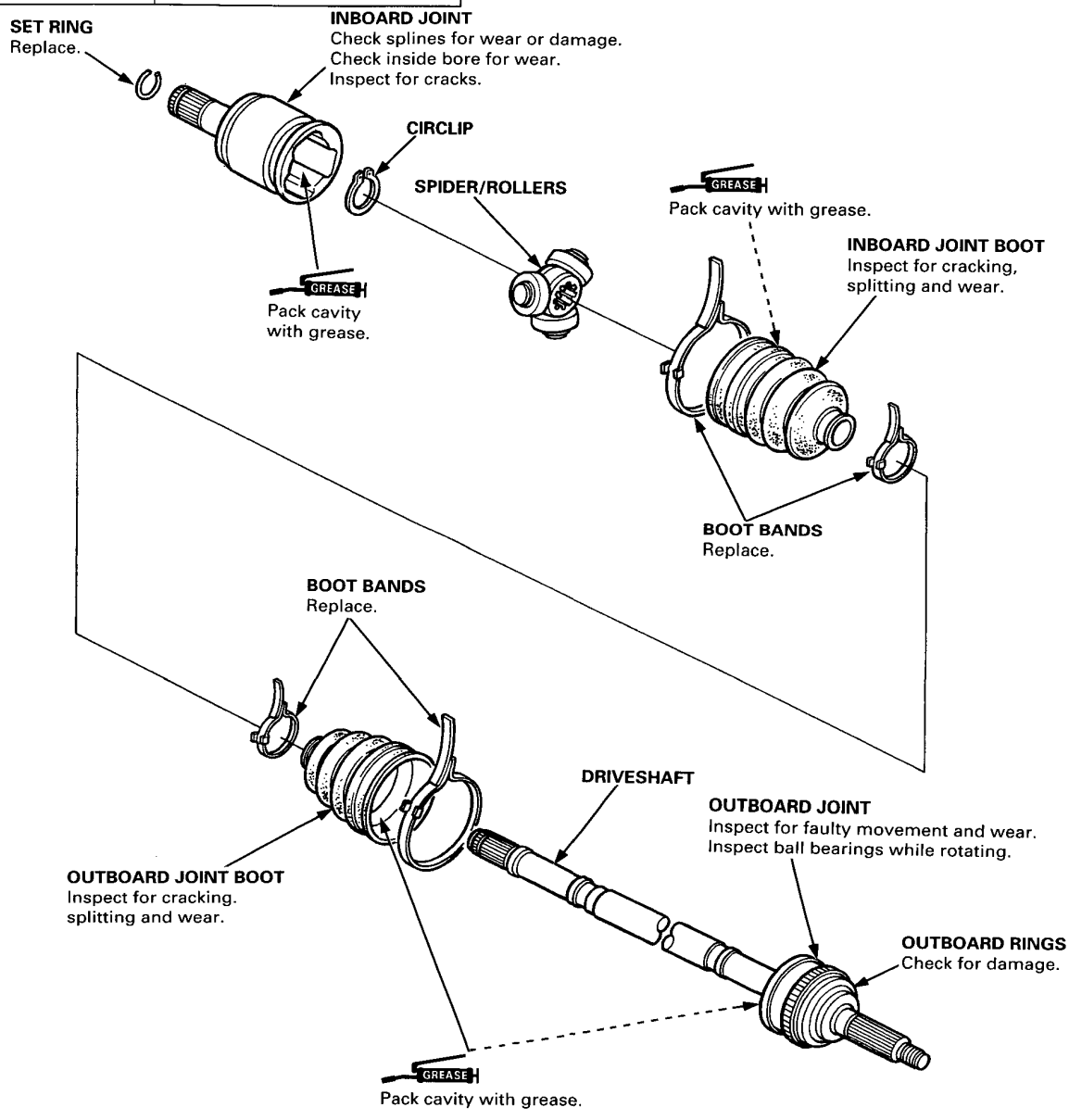
Disassembly/Inspection

NOTE:

- Clean the disassembled parts with solvent, and dry them throughly with compressed air. Do not wash the rubber parts with solvent.
- GREASE: Thoroughly pack the inboard joint and both joint boots with the joint grease included in the new driveshaft set.

Grease quantity:

Inboard Joint	85 – 105 g (3.0 – 3.7 oz)
Outboard Joint	40 – 60 g (1.4 – 2.1 oz)

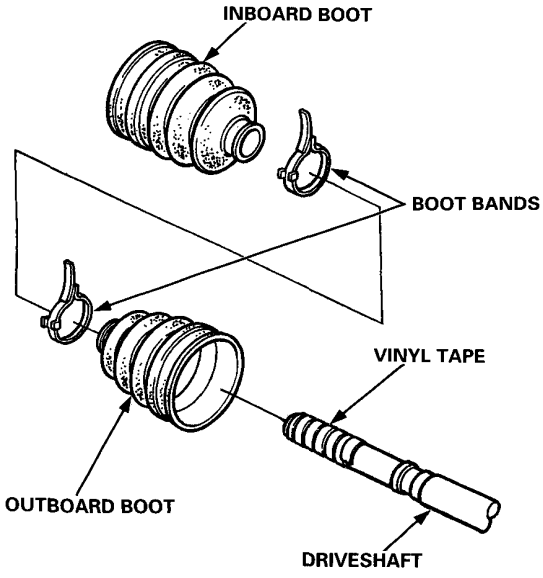


Reassembly

1. Wrap the splines with vinyl tape to prevent damage to the boots.

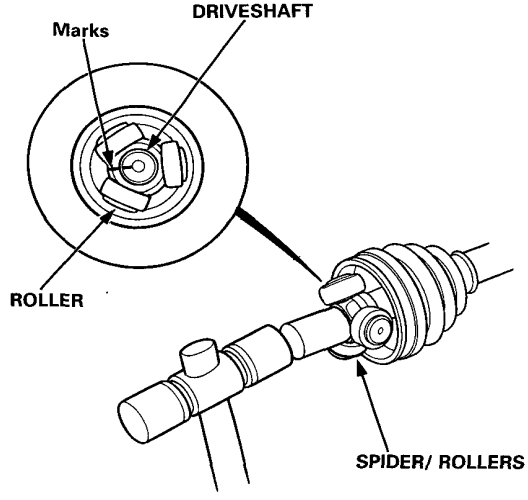
2. Install the boots and new boot bands to the driveshaft, then remove the vinyl tape.

   CAUTION: Take care not to damage the boots.



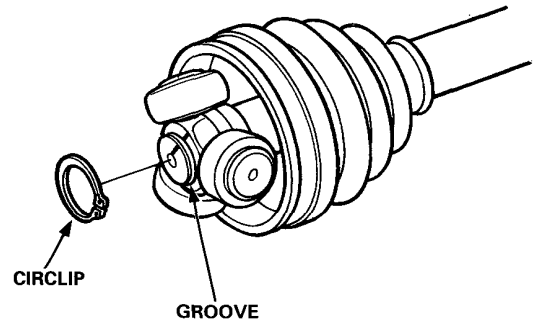
3. Install the spider/rollers on the driveshaft by aligning the marks on the spider/rollers and end of the driveshaft.

   CAUTION: Be careful not to damage the rollers.



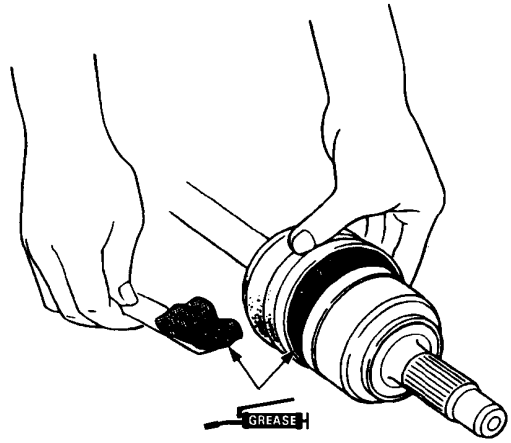
4. Fit the circlip into the driveshaft groove.

   NOTE: Always rotate the circlip in its groove to be sure it is fully seated.



5. Pack the outboard joint with the joint grease included in the new driveshaft set.

   Grease quantity: 40 – 60 g (1.4 – 2.1 oz)

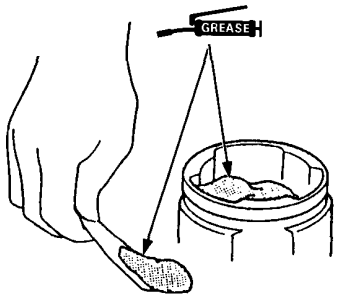


(cont'd)

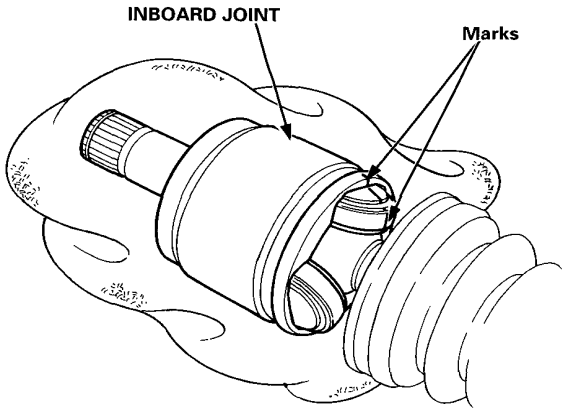
Reassembly (cont'd)

6. Pack the inboard joint with the joint grease included in the new driveshaft set.

   Grease quantity: 85 – 105 g (3.0 – 3.7 oz)

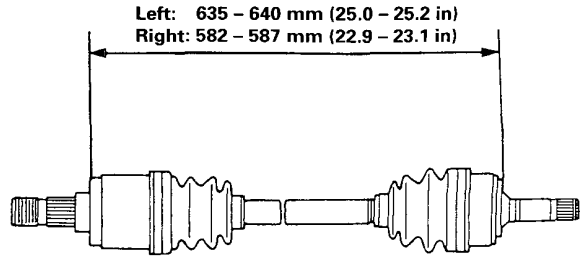


7. Fit the inboard joint onto the driveshaft by aligning the marks on the inboard joint and rollers.



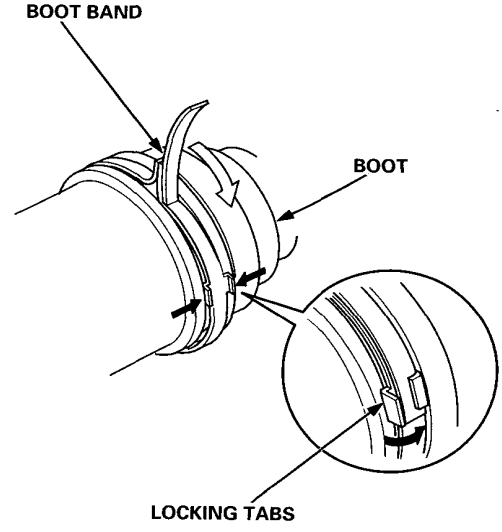
8. Adjust the length of the driveshafts to the figure below, then adjust the boots to halfway between full compression and full extension.

   NOTE: The ends of boots seat in the groove of the driveshaft and joint.



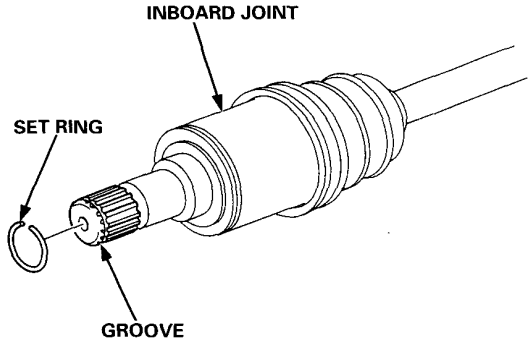
9. Install new boot bands on the boots, and bend both sets of locking tabs.

10. Lightly tap on the doubled-over portions to reduce their height.



11. Install the new set ring onto the driveshaft groove.

CAUTION: Always use a new set ring whenever the driveshaft is being installed.



Propeller Shafts

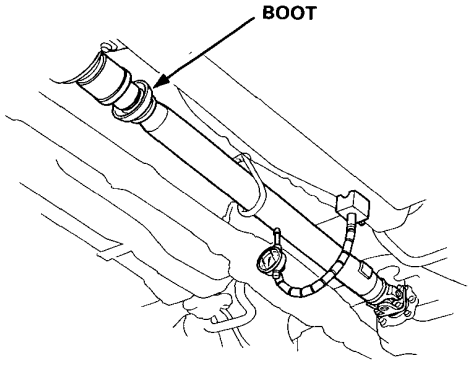
Inspection

Shaft Runout

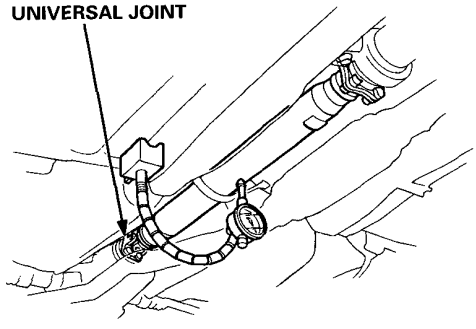
1. Put the transmission in neutral for manual transmission models, and in [P] for automatic transmission models.
2. Raise the car off the ground, and support it with safety stands in the proper locations.
3. Install a dial indicator with the indicator contacting the center of the No. 1 or No. 2 propeller shaft.
4. With someone holding either rear wheel, rotate the other wheel and check the runout.

Propeller Shaft Runout:
Service Limit: 1.0 mm (0.04 in)

No. 1 Propeller shaft:



No. 2 Propeller shaft:

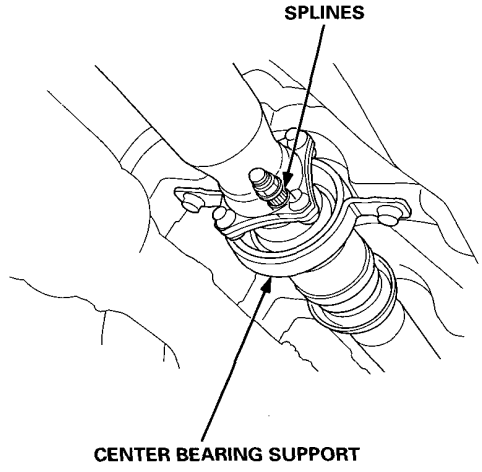


Universal Joint · Joint · Boot

- Check each universal joint for excessive play or rattle.
- Check for loose joints or connections.
- Check the boot for cracking, splitting or other faults.

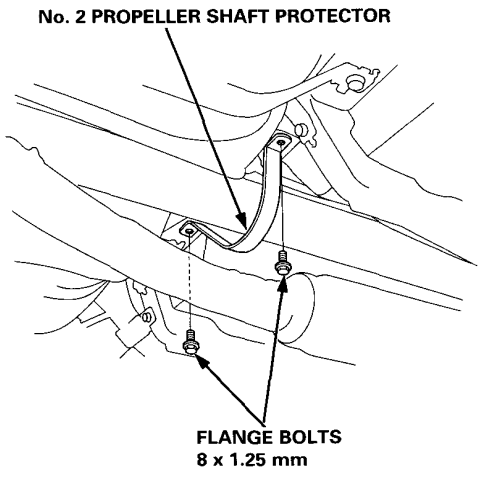
Splines/Center Bearing Support

1. Raise the car off the ground, and support it with safety stands in the proper locations.
2. Inspect the shaft splines for excessive play or rattle.
3. Inspect the center bearing support for play.



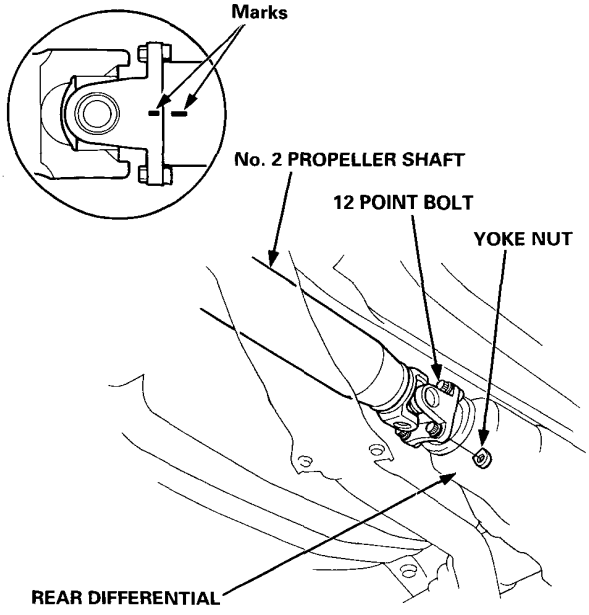
Removal

1. Remove the flange bolts, then remove the No. 2 propeller shaft protector.



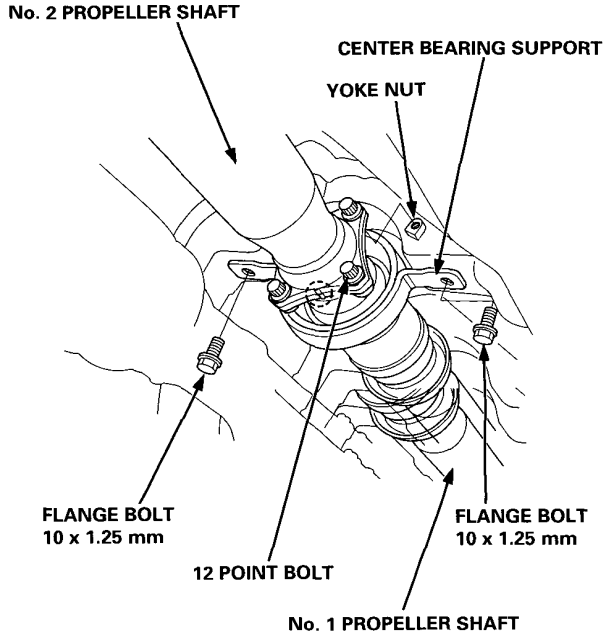
2. Mark the No. 2 propeller shaft and rear differential with paint.

3. Remove the four 12 point bolts and yoke nuts, then remove the No. 2 propeller shaft from the rear differential.

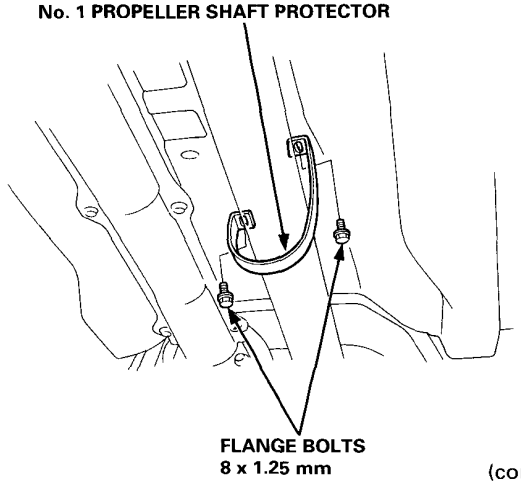


4. Remove the four 12 point bolts and yoke nuts, then remove the No. 2 propeller shaft from the No. 1 propeller shaft.

5. *Remove the two flange bolts on the center bearing support.*



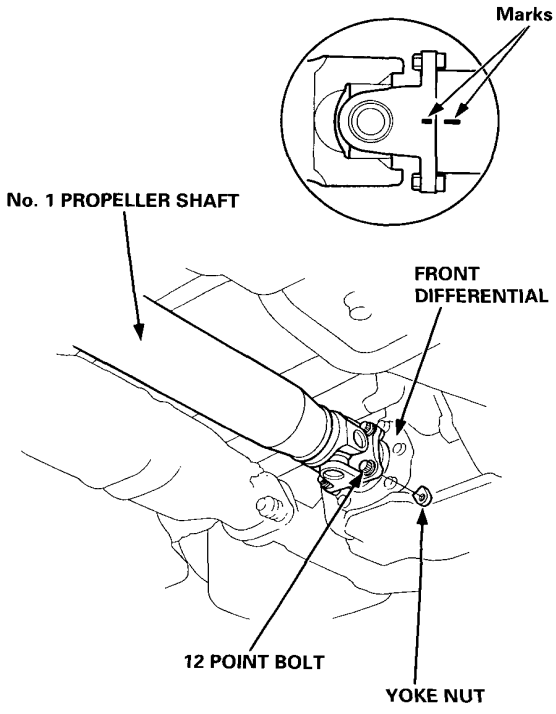
6. Remove the flange bolts, then remove the No. 1 propeller shaft protector.



(cont'd)

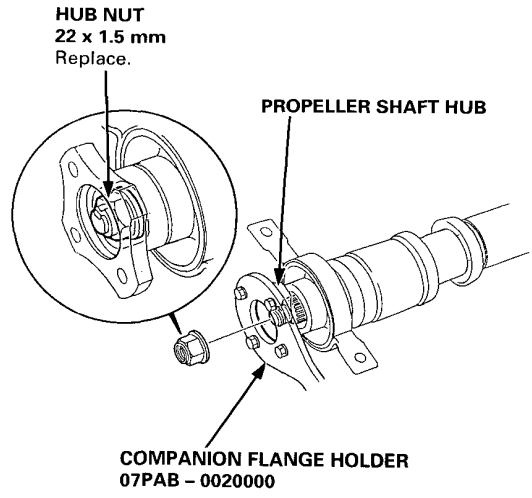
Removal (cont'd)

7. Mark the No. 1 propeller shaft and front differential with paint.
8. Remove the four 12 point bolts and yoke nuts, then remove the No. 1 propeller shaft from the front differential.

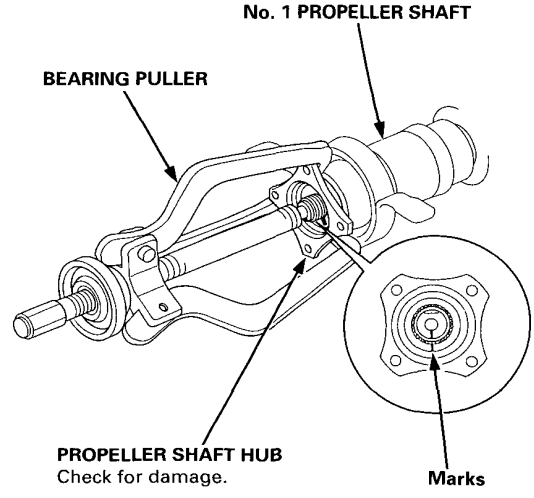


Disassembly

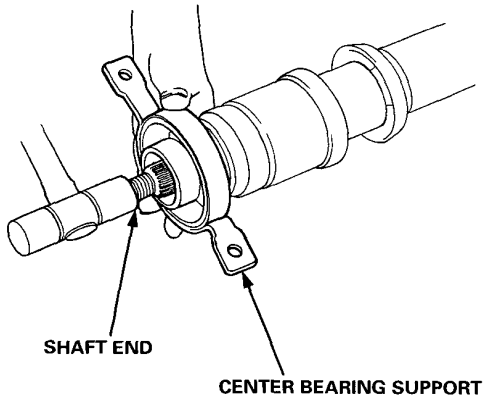
1. Raise the locking tab on the hub nut.
2. Remove the hub nut from the No. 1 propeller shaft using the special tool to prevent the shaft form turning.



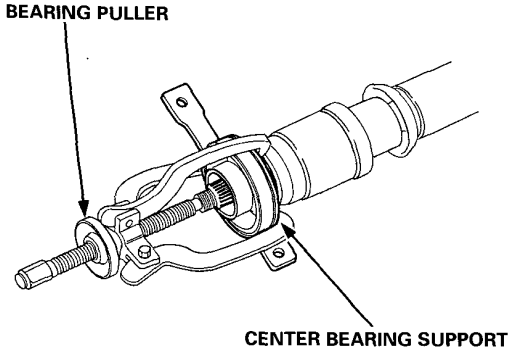
3. Mark the No. 1 propeller shaft and propeller shaft hub with paint.
4. Remove the propeller shaft hub from the No. 1 propeller shaft using a commercially available bearing puller.



5. Holding the center bearing support with one hand, lightly tap on the shaft end with a soft hammer until the shaft is clear of the bearing support.



—. If difficulty is encountered in removing the shaft, use a commercially available bearing puller. Replace the bearing support with a new one when a puller is used to remove it.

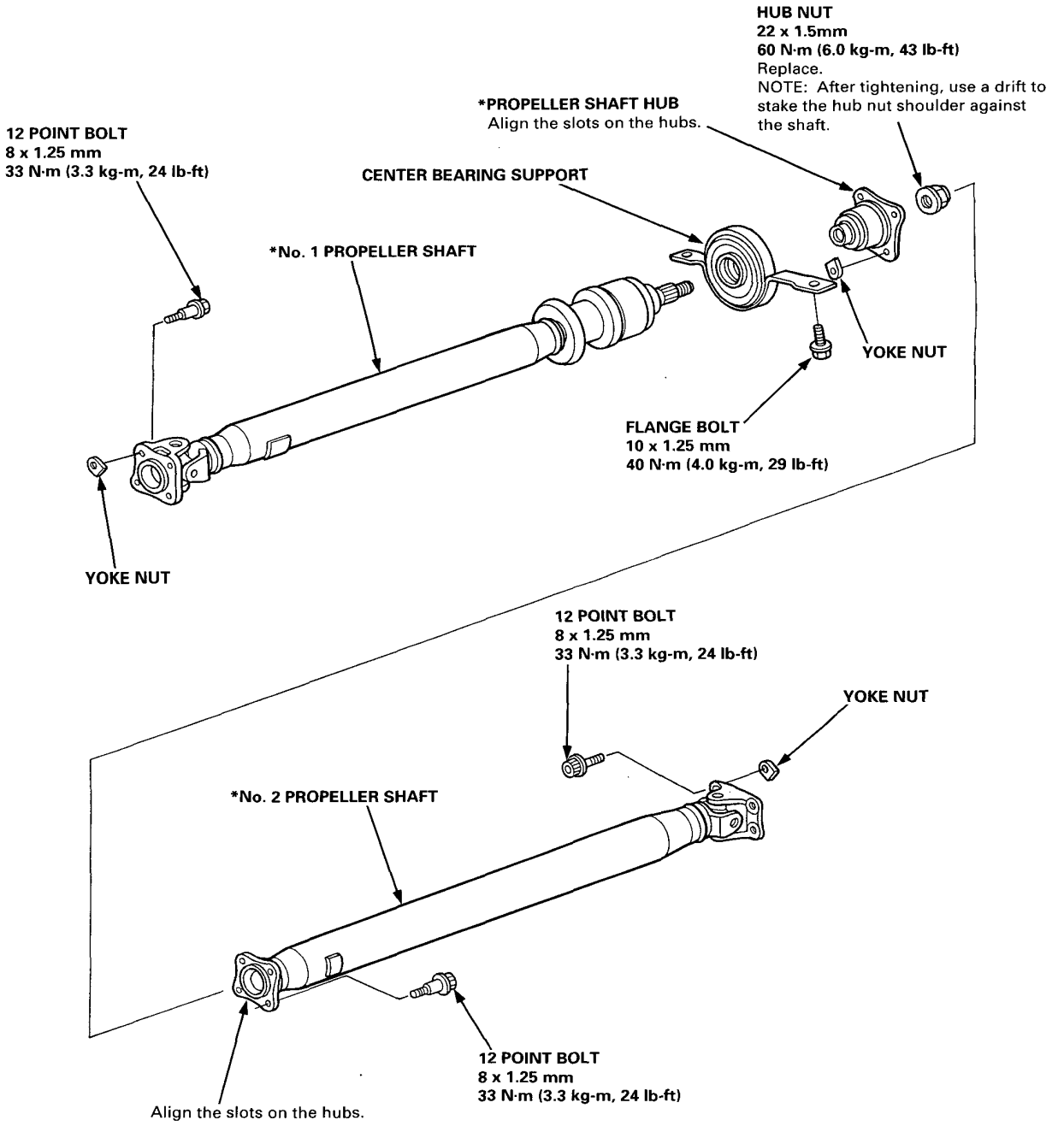


Propeller shafts

Reassembly

NOTE:

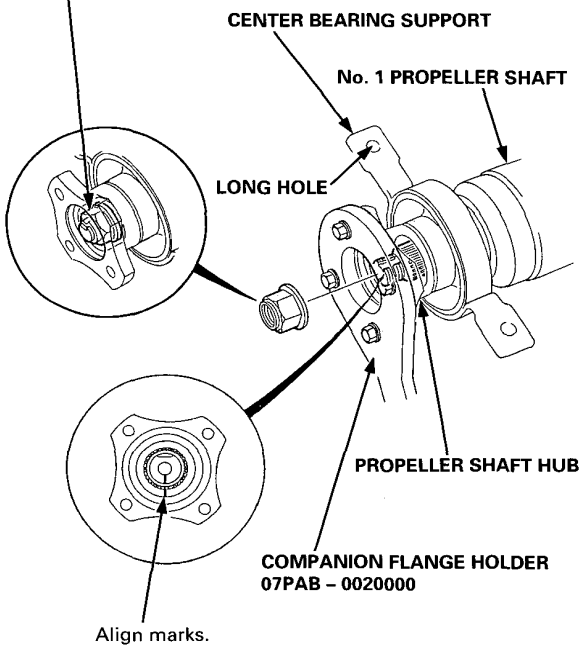
- When replace the "*" marked parts, replace the propeller shaft as assembly. If replace the "*" marked parts only, the shaft may vibrate.
- When installing the yoke nut, the flat portion faces center of the shaft.
- When installing the parts, align the marks.


HUB NUT
22 x 1.5mm
60 N·m (6.0 kg-m, 43 lb-ft)
Replace.
NOTE: After tightening, use a drift to stake the hub nut shoulder against the shaft.
*PROPELLER SHAFT HUB
Align the slots on the hubs.
12 POINT BOLT
8 x 1.25 mm
33 N·m (3.3 kg-m, 24 lb-ft)
CENTER BEARING SUPPORT
*No. 1 PROPELLER SHAFT
YOKE NUT
FLANGE BOLT
10 x 1.25 mm
40 N·m (4.0 kg-m, 29 lb-ft)
YOKE NUT
12 POINT BOLT
8 x 1.25 mm
33 N·m (3.3 kg-m, 24 lb-ft)
YOKE NUT
*No. 2 PROPELLER SHAFT
12 POINT BOLT
8 x 1.25 mm
33 N·m (3.3 kg-m, 24 lb-ft)
Align the slots on the hubs.

Reassembly

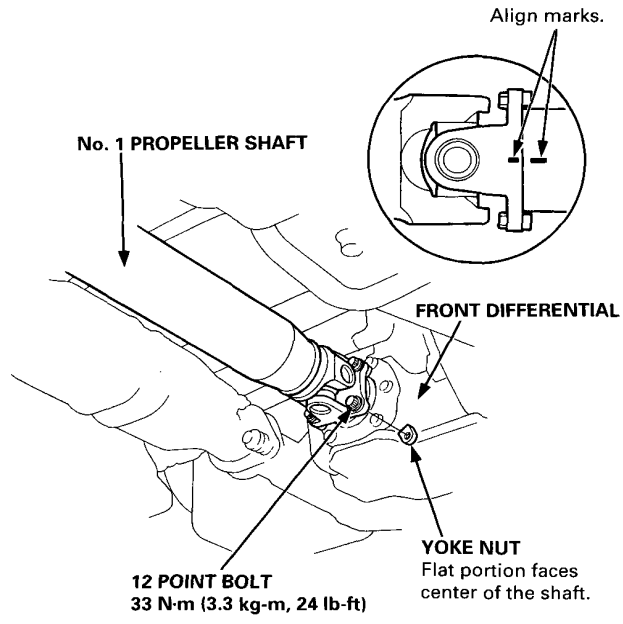
1. *Install* the center bearing support onto the No. 1 propeller shaft as shown below.
2. Install the propeller shaft hub on the No. 1 propeller shaft by aligning the marks, then loosely install the new hub nut.
3. Hold the propeller shaft hub with a special tool, and tighten the hub nut.

HUB NUT
22 x 1.5 mm
60 N·m (6.0 kg-m, 43 lb-ft)
NOTE: After tightening, use a drift to stake the hub nut shoulder against the shaft.

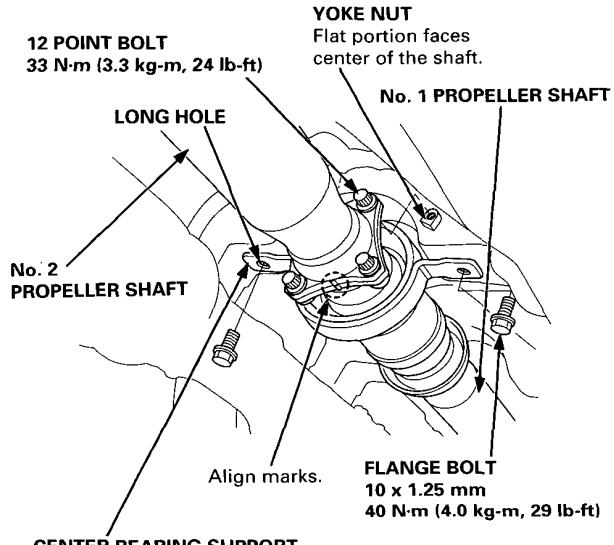


Installation

1. Connect the No. 1 propeller shaft to the front differential with the four 12 point bolts and yoke nuts by aligning the marks.



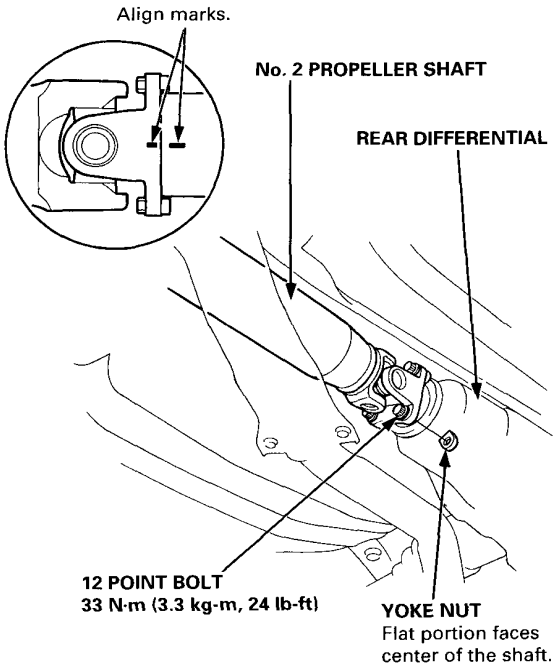
2. Install the center bearing support of the No. 1 propeller shaft onto the flame with the two flange bolt as shown below.
3. Connect the No. 1 and No. 2 propeller shaft with the four 12 point bolts and yoke nuts by aligning the slots on the hubs.



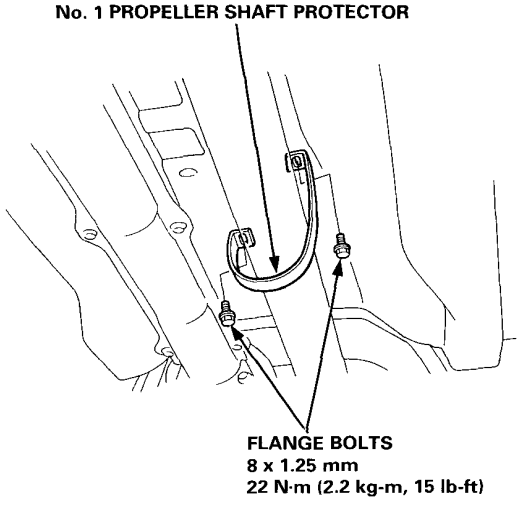
(cont'd)

Installation (cont'd)

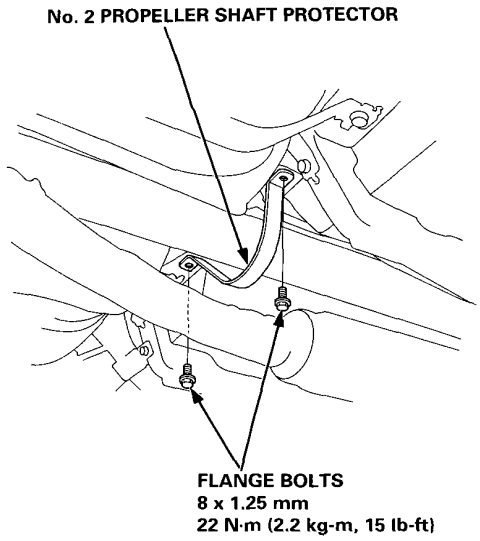
4. Connect the No. 2 propeller shaft and rear differential with the four 12 point bolts and yoke nuts by aligning the marks.



5. Install the No. 1 propeller shaft onto the flame.



6. Install the No. 2 propeller shaft onto the flame.



Anti-lock Brake System (ABS) (4WD)

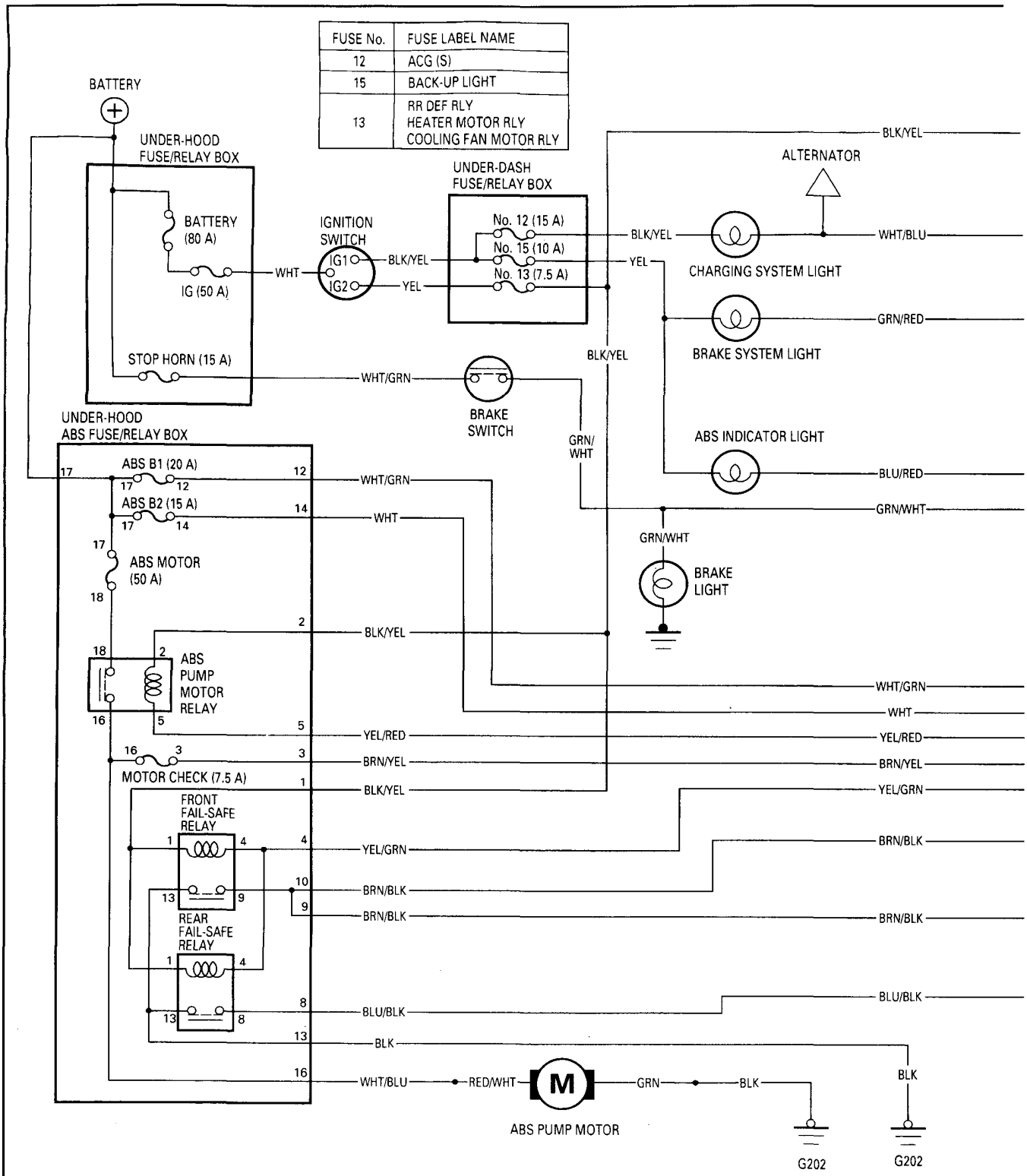
Circuit Diagram 19-2
Troubleshooting
Symptom-to-System Chart 19-4
Flowcharts 19-5

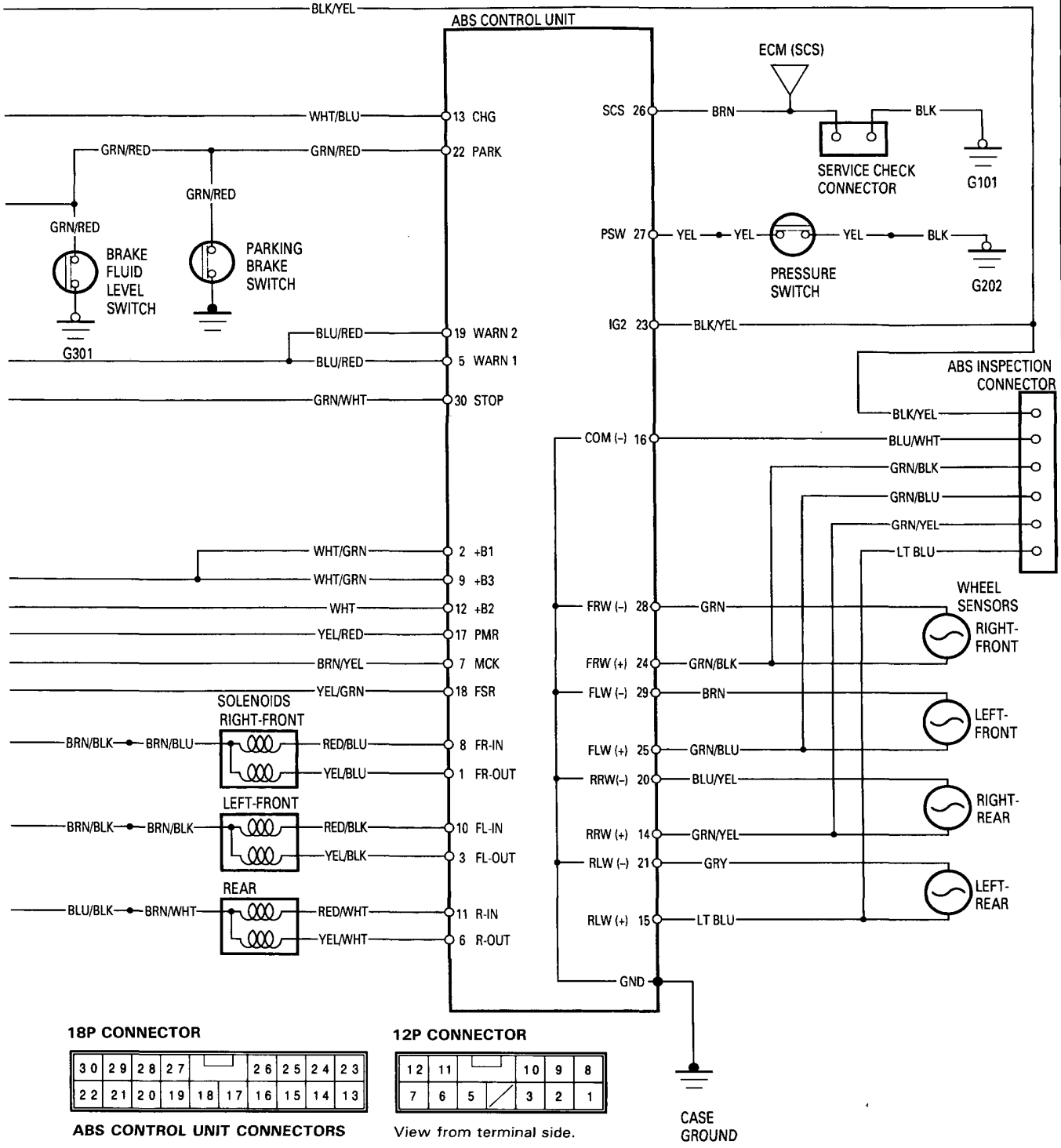
Outline of Model Changes

As the ABS of the cars with 4WD has been modified, the changes were described in this section.

NOTE: Refer to the '92 CIVIC shop manual (No. 62SR300) for service procedures and data not included in this supplement.

Circuit Diagram





18P CONNECTOR

30	29	28	27			26	25	24	23
22	21	20	19	18	17	16	15	14	13

12P CONNECTOR

12	11			10	9	8
7	6	5		3	2	1

ABS CONTROL UNIT CONNECTORS

View from terminal side.

Symptom-to-System Chart

PROBLEM CODE		PROBLEMATIC COMPONENT/ SYSTEM	AFFECTED				PAGE	OTHER COMPONENT	PAGE
MAIN CODE	SUB-CODE		FRONT RIGHT	FRONT LEFT	REAR RIGHT	REAR LEFT			
①	–	ABS pump motor over-run	–	–	–	–	–	Solenoid ABS pump motor Pressure switch	
	②	ABS pump motor circuit problem	–	–	–	–	19-5	ABS Motor relay Motor check fuse ABS Motor fuse	–
	③	High pressure leakage	–	–	–	–	–	Solenoid	–
	④	Pressure switch	–	–	–	–	–		
	⑧	Accumulator gas leakage	–	–	–	–	–		
②	①	Parking brake switch-related problem	–	–	–	–	–	Brake fluid level switch Brake system light	
③	①	Pulser(s)	○				–	Wheel sensor installation	
	②			○					
	④				○	○			
④	①	Wheel sensor	○				–		
	②			○					
	④				○				
	⑧					○			
⑤	–	Wheel sensor(s)			○	○	–	Modulator Rear brake drag	
	④				○				
	⑧					○			
⑥	–	Fail-safe relay		○		○	19-8		– (Function Test)
	①			○					
	④					○			
⑦	①	Solenoid related problem	○				–	ABS B1 fuse Front fail-safe relay	
	②			○					
	④				○	○	–	Rear fail-safe relay	

Flowcharts

Problem Code 1-2: ABS Pump Motor Circuit Problem

CAUTION: Use only the digital multimeter to check the system.

NOTE: If a malfunction is detected, this code appears and the fail-safe function is activated. The ABS indicator light comes ON after restarting the engine until the malfunction code is erased (by disconnecting the ABS B2 (15 A) fuse in the under-hood ABS fuse/relay box for three seconds).

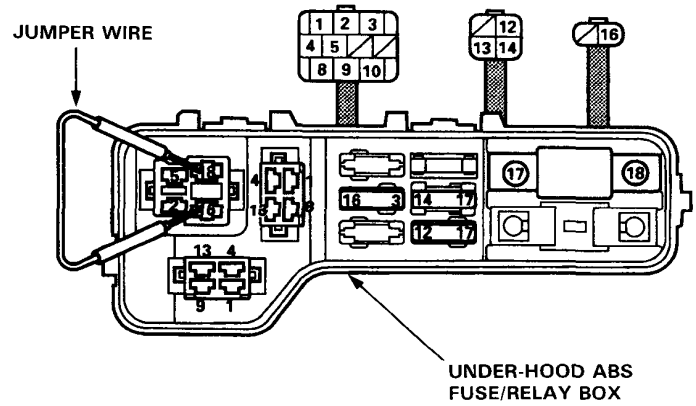
Pre-test steps:
- Check ABS MOTOR (50 A) fuse in the under-hood ABS fuse/relay box.
- Check MOTOR CHECK (7.5 A) fuse in the under-hood ABS fuse/relay box.
- Check for loose under-hood ABS fuse/relay box connectors.

Remove and check the ABS pump motor relay.

Does it work properly? NO → **Replace the ABS pump motor relay.**

YES

Connect the No. 16 and No. 18 terminals using a jumper wire.



Does the ABS pump motor run? NO → (To page 19-7)

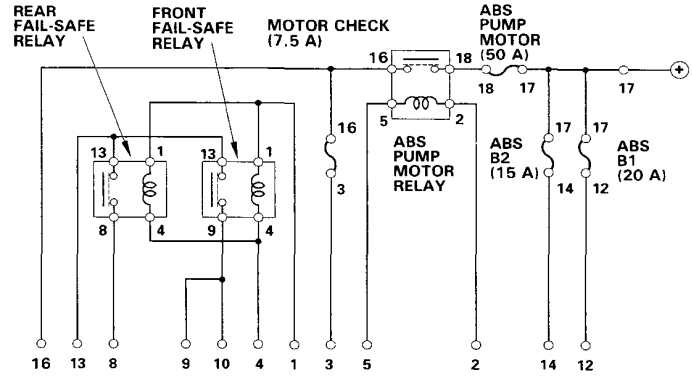
YES

Disconnect the jumper wire.

Remove the MOTOR CHECK fuse (7.5 A) from under-hood ABS fuse/relay box.

Turn the ignition switch ON.

(To page 19-6)


REAR FAIL-SAFE RELAY
FRONT FAIL-SAFE RELAY
MOTOR CHECK (7.5 A)
ABS PUMP MOTOR (50 A)
ABS PUMP MOTOR RELAY
ABS B2 (15 A)
ABS B1 (20 A)
16 13 8 9 10 4 1 3 5 2 14 12

UNDER-HOOD ABS FUSE/RELAY BOX CIRCUIT DIAGRAM

(cont'd)

Flowcharts (cont'd)

(From page 19-5)

Check for voltage between the under-hood ABS fuse/relay box MOTOR CHECK fuse No. 3 terminal and body ground.

Is there battery voltage?

NO → **Repair open in BRN/YEL wire between the MOTOR CHECK (7.5A) fuse in the under-hood ABS fuse/relay box and ABS control unit.**

YES

Reinstall the fuse in the under-hood ABS fuse/relay box.

Disconnect the 2P connector from the ABS pump motor.

Check for voltage between the ABS pump motor relay No. 16 terminal and body ground.

Is there battery voltage?

NO → **Replace the under-hood ABS fuse relay box.**

YES

Check for voltage between the No. 2 terminal and body ground.

Is there battery voltage?

NO → **Repair open in BLK/YEL wire between the No. 13 RR DEF RLY/ HEATER MOTOR RLY/ COOLING FAN MOTOR RLY (7.5 A) fuse in the under-dash fuse/relay box and ABS pump motor relay.**

YES

Reinstall the ABS pump motor relay.

Disconnect the 18P connector from the ABS control unit.

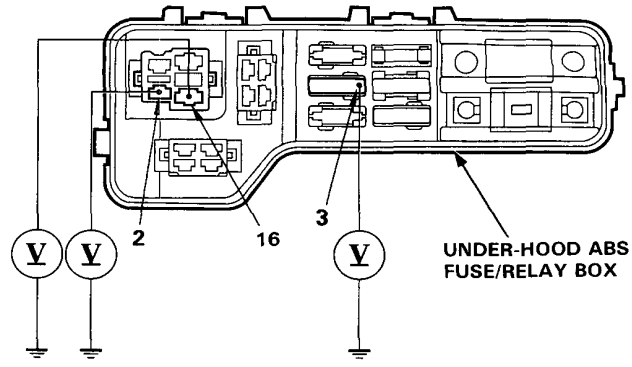
Check for voltage between the ABS control unit connector No. 17 (YEL/RED) terminal and body ground.

Is there battery voltage?

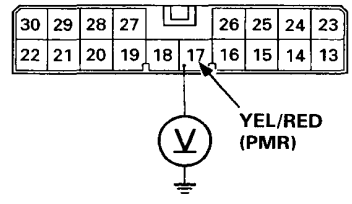
NO → **Repair open in YEL/RED wire between the ABS pump motor relay and ABS control unit.**

YES

Check for loose ABS control unit connectors. If necessary, substitute a known-good ABS control unit and recheck.



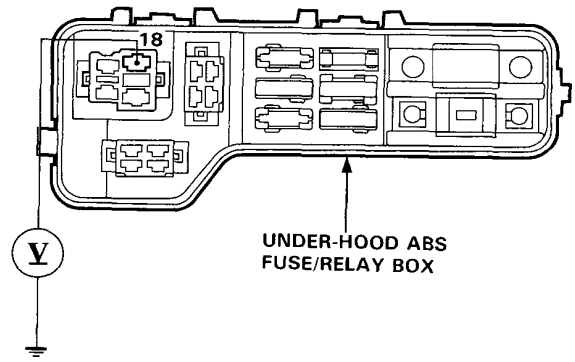
18P CONNECTOR



View from ABS control unit terminal side.

(From page 19-5)

Check for voltage between the No. 18 terminal and body ground.



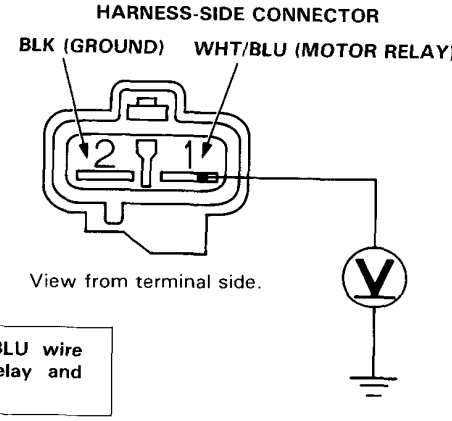
Is there battery voltage?

NO → **Replace the under-hood ABS fuse/relay box.**

YES

Disconnect the 2P connector from the pump motor.

Check for voltage between the No. 1 (WHT/BLU) terminal and body ground.



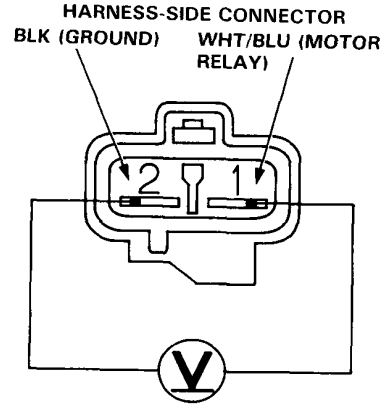
View from terminal side.

Is there battery voltage?

NO → **Repair open in WHT/BLU wire between the motor relay and pump motor.**

YES

Check for voltage between the No. 1 (WHT/BLU) terminal and No. 2 (BLK) terminal.



View from terminal side.

Is there battery voltage?

NO → **Repair open in BLK wire between the pump motor and ground or poor ground (G202).**

YES

***Faulty* pump motor.**
***Replace* the ABS pump assembly.**

(cont'd)

Flowcharts (cont'd)

Problem Code 6-1: Front Fail-Safe Relay Circuit

CAUTION: Use only the digital multimeter to check the system.

Pre-test steps:
- Check ABS B1 (20 A) fuse in the under-hood ABS fuse/relay box.
- Check for loose under-hood ABS fuse/relay box connectors.

Remove the front fail-safe relay from the under-hood ABS fuse/relay box.

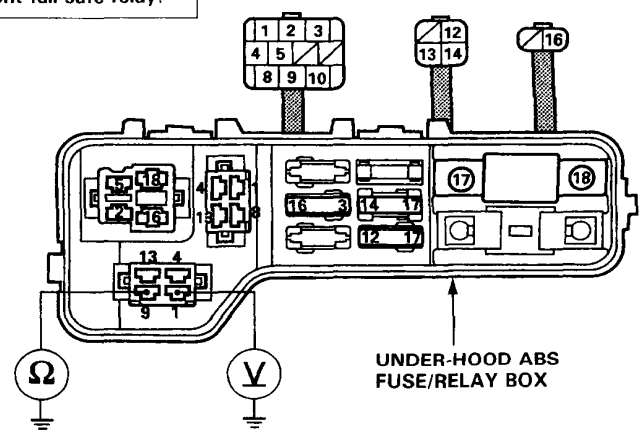
Check relay function.

Does it work properly? NO → **Replace the front fail-safe relay.**

YES

Turn the ignition switch ON.

Check for voltage between the fail-safe relay No. 1 (BLK/YEL) terminal and body ground.



Is there battery voltage? NO → **Repair open in BLK/YEL wire between the No. 13 RR DEF RLY/HEATER MOTOR RLY/COOLING FAN MOTOR RLY (7.5 A) fuse in the under-dash fuse/relay box and front fail-safe relay.**

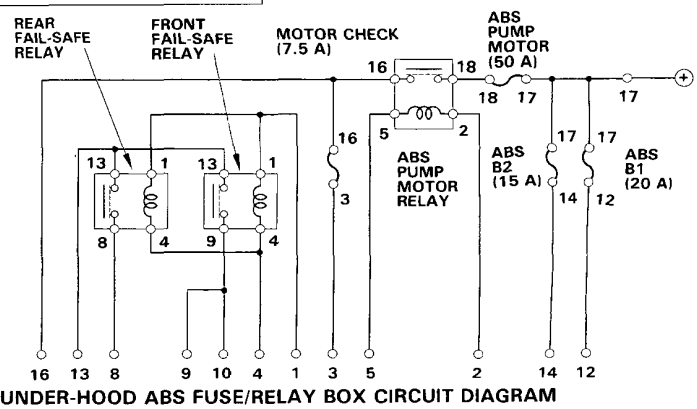
YES

Turn the ignition switch OFF.

Disconnect the 10P connector from the solenoid.

Check for continuity between the fail-safe relay No. 9, 10 (BRN/BLK) terminal and body ground.

(To page 19-9)


REAR FAIL-SAFE RELAY
FRONT FAIL-SAFE RELAY
MOTOR CHECK (7.5 A)
ABS PUMP MOTOR (50 A)
ABS PUMP MOTOR RELAY
ABS B2 (15 A)
ABS B1 (20 A)
16 13 8 9 10 4 1 3 5 2 14 12

UNDER-HOOD ABS FUSE/RELAY BOX CIRCUIT DIAGRAM

(From page 19-8)

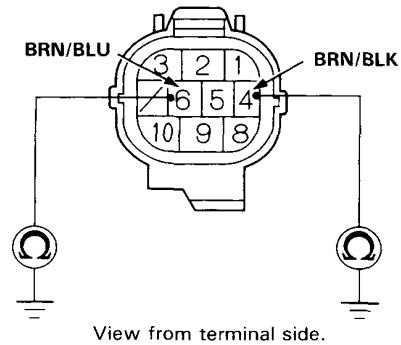
Is there continuity?

YES → **Repair short in BRN/BLK wire between the solenoid and front fail-safe relay.**

NO

Check each wire for continuity between the solenoid terminals and body ground
No. 6 (BRN/BLU): Front Right
No. 4 (BRN/BLK): Front Left

SOLENOID-SIDE CONNECTOR



View from terminal side.

Is there continuity?

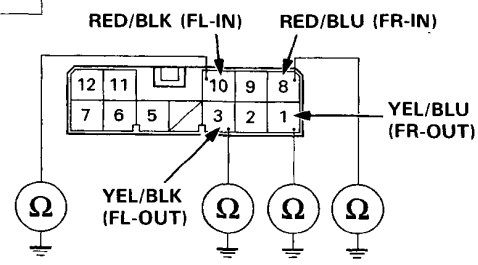
YES → **Faulty solenoid (short). Replace the modulator unit.**

NO

Disconnect the connectors from the ABS control unit.

Check each wire for continuity between the ABS control unit and body ground.
No. 8 (RED/BLU): Front Right Inlet
No. 1 (YEL/BLU): Front Right Outlet
No. 10 (RED/BLK): Front Left Inlet
No. 3 (YEL/BLK): Front Left Outlet

12P CONNECTOR



View from ABS control unit terminal side.

Is there continuity?

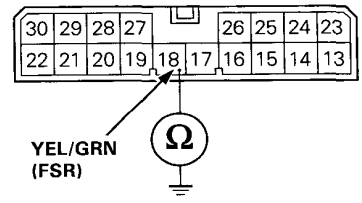
YES → **Repair short in wire between the solenoid and ABS control unit:**
RED/BLU: Front Right Inlet
YEL/BLU: Front Right Outlet
RED/BLK: Front Left Inlet
YEL/BLK: Front Left Outlet

NO

Remove the rear fail-safe relay.

Check for continuity between the No. 18 (YEL/GRN) terminal and body ground.

18P CONNECTOR



View from ABS control unit terminal side.

Is there continuity?

YES → **Repair short in YEL/GRN wire between the ABS control unit and front fail-safe relay.**

NO

(To page 19-10)

(cont'd)

Flowcharts (cont'd)

(From page 19-9)

Reinstall the front fail-safe relay.

Turn the ignition switch ON.

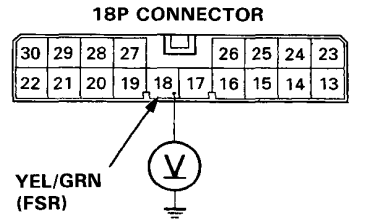
Check for voltage between the ABS control unit connector No. 18 (YEL/GRN) terminal and body ground.

Is there battery voltage?

NO → **Repair open in YEL/GRN wire between the front fail-safe relay and ABS control unit.**

YES

Check for loose ABS control unit connectors. If necessary, substitute a known-good ABS control unit and recheck.



View from ABS control unit terminal side.

Problem Code 6-4: Rear Fail-Safe Relay Circuit

CAUTION: Use only digital multimeter to check the system.

Pre-test step:

- Check for loose under-hood ABS fuse/relay box connectors.

Remove the rear fail-safe relay from the under-hood ABS fuse/relay box.

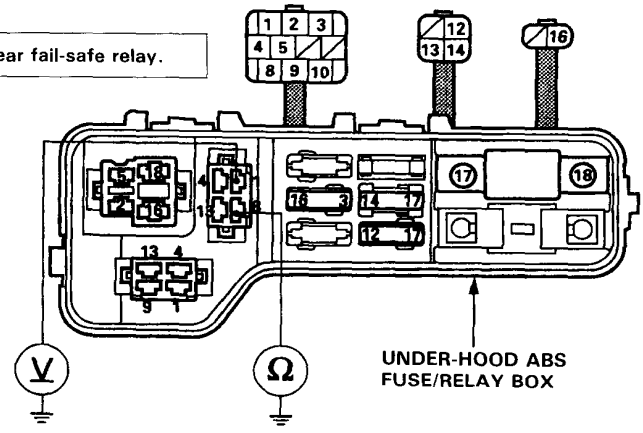
Check relay function.

Does it work properly? NO → **Replace the rear fail-safe relay.**

YES

Turn the ignition switch ON.

Check for voltage between the fail-safe relay No. 1 (BLK/YEL) terminal and body ground.



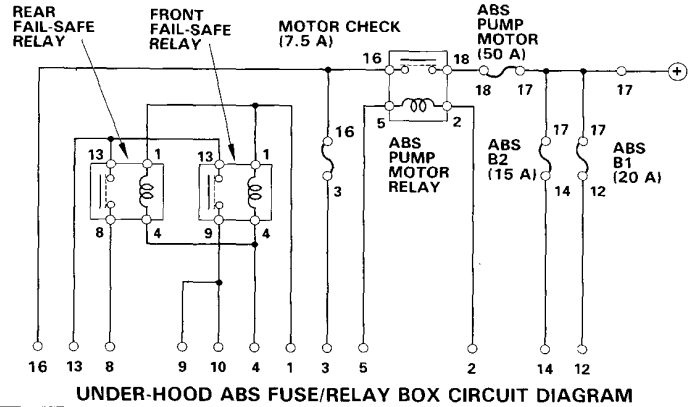
Is there battery voltage? NO → **Repair open in BLK/YEL wire between the No. 13 RR DEF RLY/HEATER MOTOR RLY/COOLING FAN MOTOR RLY (7.5 A) fuse in the under-dash fuse/relay box and front fail-safe relay.**

YES

Turn the ignition switch OFF.

Disconnect the 10P connector from the solenoid.

Check for continuity between the fail-safe relay No. 8 (BLU/BLK) terminal and body ground.


REAR FAIL-SAFE RELAY
FRONT FAIL-SAFE RELAY
MOTOR CHECK (7.5 A)
ABS PUMP MOTOR (50 A)
ABS PUMP MOTOR RELAY
ABS B2 (15 A)
ABS B1 (20 A)
16 13 8 9 10 4 1 3 5 2 14 12

UNDER-HOOD ABS FUSE/RELAY BOX CIRCUIT DIAGRAM

Is there continuity? YES → **Repair short in BLU/BLK wire between the solenoid and rear fail-safe relay.**

NO

(To page 19-12)

(cont'd)

Flowcharts (cont'd)

(From page 19-11)

Check for continuity between the solenoid No. 5 (BRN/WHT) terminal and body ground.

Is there continuity?

YES → **Faulty solenoid (short). Replace the modulator unit.**

NO

Disconnect the connectors from the ABS control unit.

Check each wire for continuity between the ABS control unit and body ground.
No. 11 (RED/WHT): Rear Inlet
No. 6 (YEL/WHT): Rear Outlet

Is there continuity?

YES → **Repair short in wire between the solenoid and ABS control unit: RED/WHT: Rear Inlet YEL/WHT: Rear Outlet**

NO

Remove the front fail-safe relay.

Check for continuity between the No. 18 (YEL/GRN) terminal and body ground.

Is there continuity?

YES → **Repair short in YEL/GRN wire between the ABS control unit and rear fail-safe relay.**

NO

Reinstall the rear fail-safe relay.

Turn the ignition switch ON.

Check for voltage between the ABS control unit connector No. 18 (YEL/GRN) terminal and body ground.

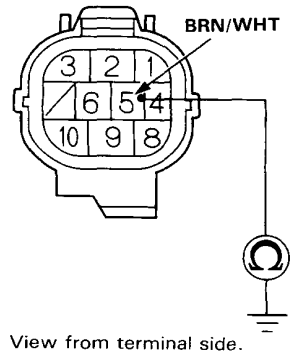
Is there battery voltage?

NO → **Repair open in YEL/GRN wire between the rear fail-safe relay and ABS control unit.**

YES

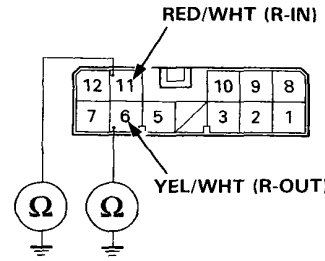
Check for loose ABS control unit connectors. If necessary, substitute a known-good ABS control unit and recheck.

SOLENOID-SIDE CONNECTOR



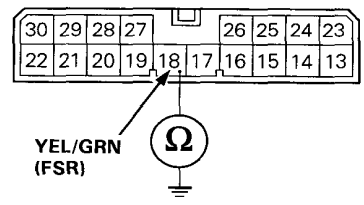
View from terminal side.

12P CONNECTOR



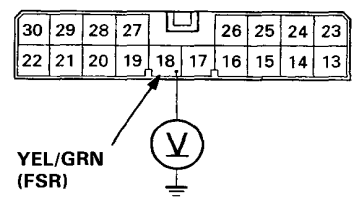
View from ABS control unit terminal side.

18P CONNECTOR



View from ABS control unit terminal side.

18P CONNECTOR



View from ABS control unit terminal side.

SUPPLEMENTAL RESTRAINT SYSTEM (SRS) (If body maintenance is required)

Some model versions of the Civic include a driver's airbag, located in the steering wheel hub. In addition, the KB model has a front passenger's airbag located in the dashboard above the glove box. There are two types of SRS: Type II (SRS unit is part of the airbag assembly), which is used for models without front passenger's airbag (all except KB model), and Type III (SRS unit is not part of the airbag assembly, and has built-in sensors), which is used for models with front passenger's airbag (KB model). Information necessary to safely service the SRS is included in this Shop Manual. Items marked with an asterisk (*) on the contents page include, or are located near, SRS components. Servicing, disassembling or replacing these items will require special precautions and tools, and should therefore be done by an authorized Honda dealer.

⚠ WARNING

- **To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal collision, all SRS service work must be performed by an authorized Honda dealer.**
- **Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional activation of the airbags.**
- **Do not bump the SRS unit. Otherwise, the system may fail in case of a collision, or the airbags may deploy when the ignition switch is ON (II) (SRS Type III).**
- **All SRS electrical wiring harnesses are covered with yellow insulation. Related components are located in the steering column, front console, dashboard, dashboard lower panel, and, in case of the KB model, in the dashboard above the glove box. Do not use electrical test equipment on these circuits.**
- **Service work nearby and in the areas listed below may affect the SRS and must therefore be performed by an authorized Honda dealer.**

SRS Type II:

- Steering wheel (Be careful not to bump the steering wheel as the SRS unit (sensors), inflator, etc. are located in it.)
- Behind the dashboard
- Under-dash fuse/relay box

SRS Type III:

- Steering wheel
- Behind the dashboard
- Under-dash fuse/relay box
- Front console
- Car stereo units and other accessories
- A/C heater

Body

*Dashboard
Replacement 20-8
Rear Emblems
Installation 20-10
Rear Window
Index 20-2
Installation 20-3
Seat
Front Seat Replacement 20-7
Sunroof
Sunroof Panel/Glass Height Adjustment 20-6
Rear Edge Closing Adjustment 20-7

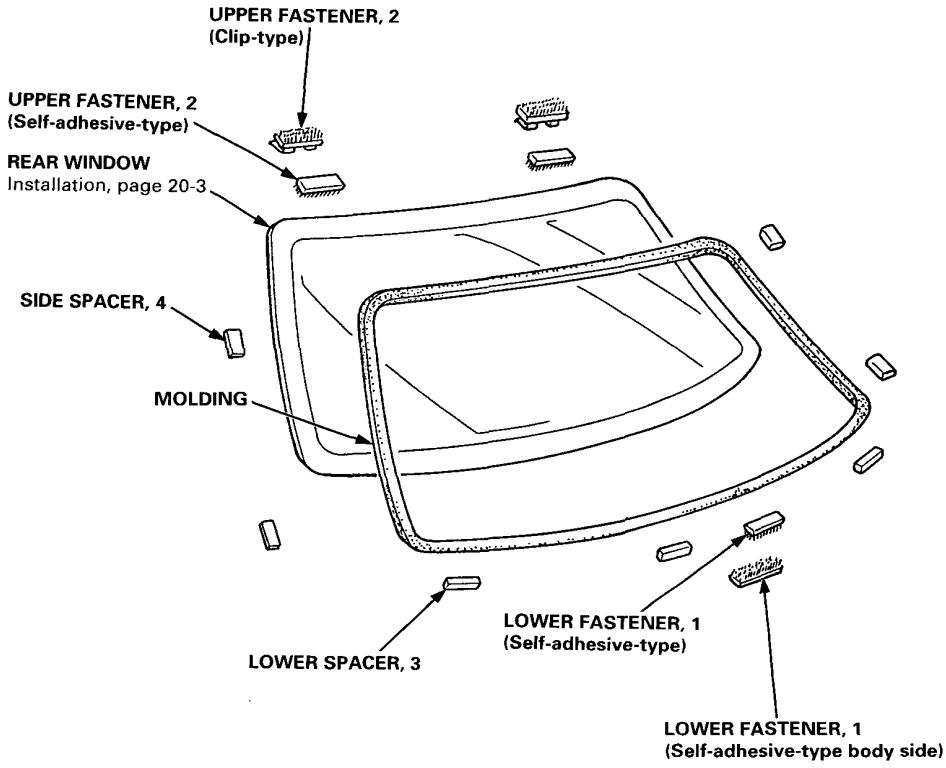
Outline of Model Changes

- The dashboard replacement procedure has been changed (KB model).
- Some version emblems have been added.
- The quantities of the fastener and spacers for the rear window have been changed.
- The rear seat access cable has been added (3D, passenger's).
- The sunroof panel/glass height adjustment procedure has been changed.
- The sunroof rear edge closing adjustment procedure has been changed.

Rear Window

Index

NOTE: The numbers after the part names show the quantities of the parts used.



Installation

1. Scrape the old adhesive smooth with a knife, to a thickness of about 2 mm (0.08 in) on the bonding surface around the entire rear window opening flange.

   NOTE:
   - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
   - Remove the upper and lower fasteners from the body.
   - Mask off surrounding surfaces before applying primer.

2. Clean the body bonding surface with a sponge dampened in alcohol.

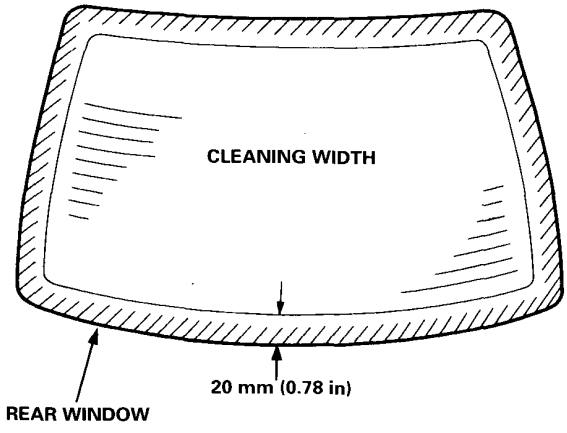
   NOTE: After cleaning, keep oil, grease and water from getting on the surface.

3. If the old rear window is to be reinstalled, use a putty knife to scrape off all traces of old adhesive, then clean the rear window surface with alcohol where new adhesive is to be applied.

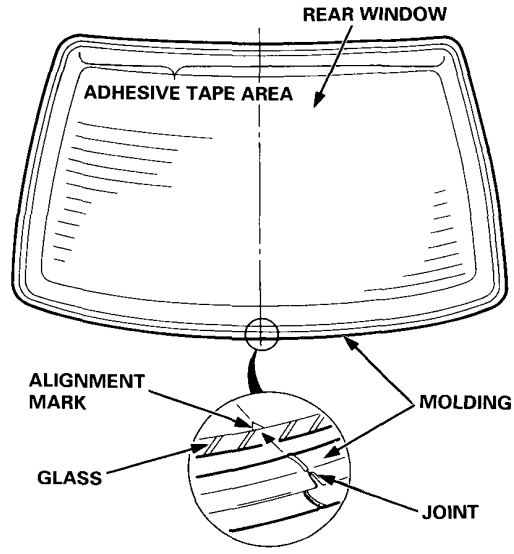
   NOTE: Make sure the bonding surface is kept free of water, oil and grease.

   CAUTION: Avoid setting the rear window on its edges; small chips may later develop into cracks.

   NOTE: Clean the shadowed area.

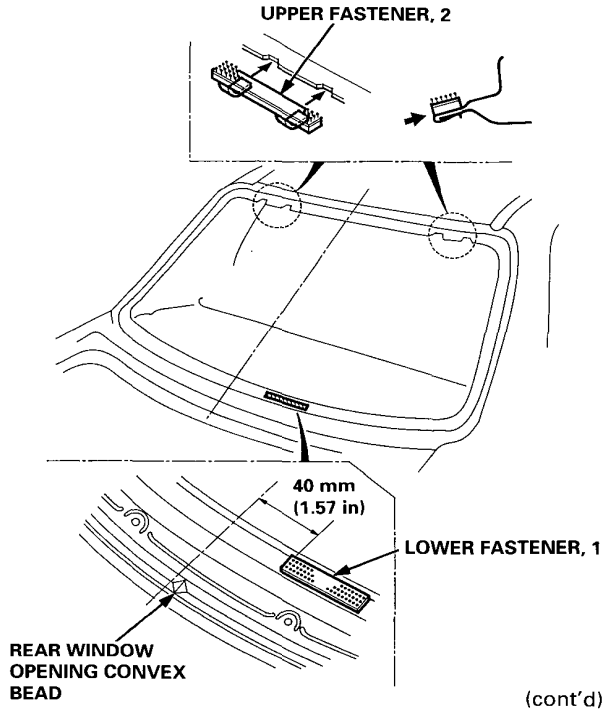


4. Glue the molding around the edge of the rear window as shown.



5. Install the upper fasteners and glue the lower fastener to the body as shown.

   NOTE: The numbers after the part names show the quantities of the parts used.



(cont'd)

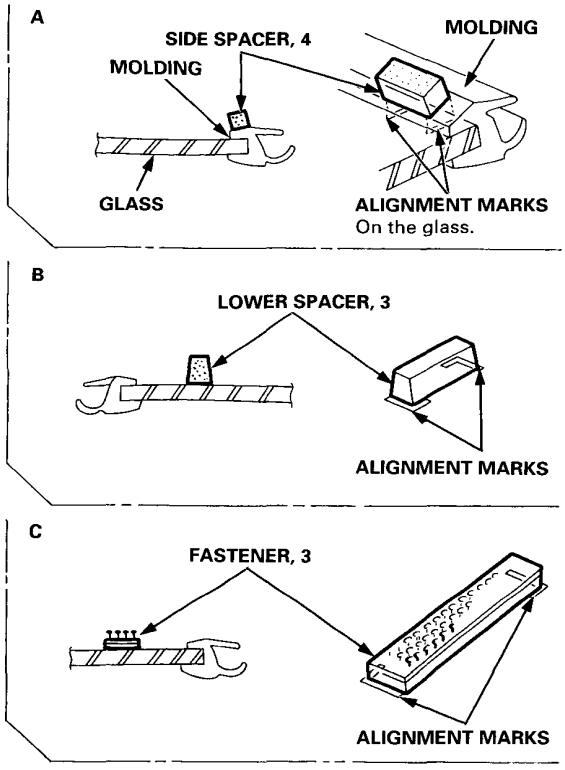
Rear Window

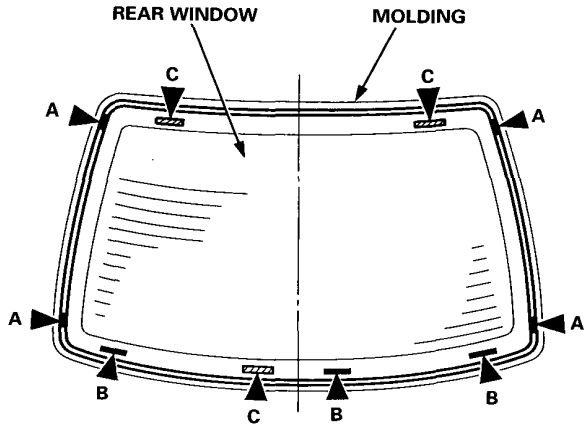
Installation (cont'd)

6. Glue the side and lower spacers and fasteners to the inside face of the rear window and molding as shown.

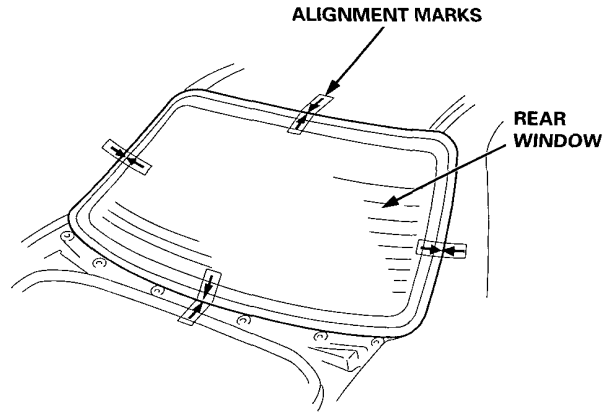
   NOTE: The numbers after the part names show the quantities of the parts used.

►: Spacer, fastener locations





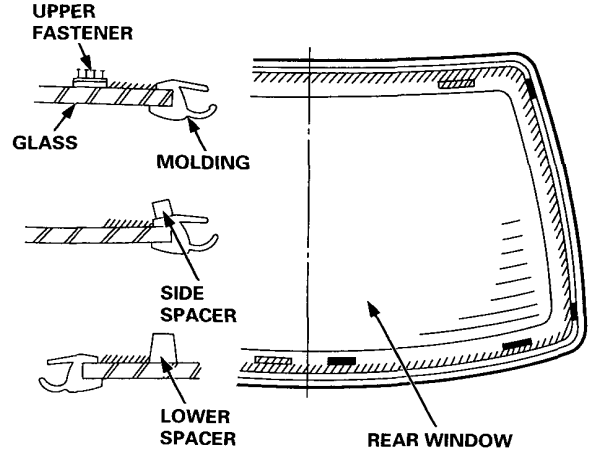
7. Set the rear window, then center it in the opening. Make alignment marks across the rear window and body with a grease pencil at the four points shown.



8. With a sponge, apply a light coat of glass primer around the edge of the rear window as shown, then lightly wipe it off with gauze or cheesecloth.

   NOTE:
   - Do not apply body primer to the rear window, and do not get body and glass primer sponges mixed up.
   - Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the rear window properly, causing a leak after the rear window is installed.
   - Keep water, dust, and abrasive materials away from the primed surface.

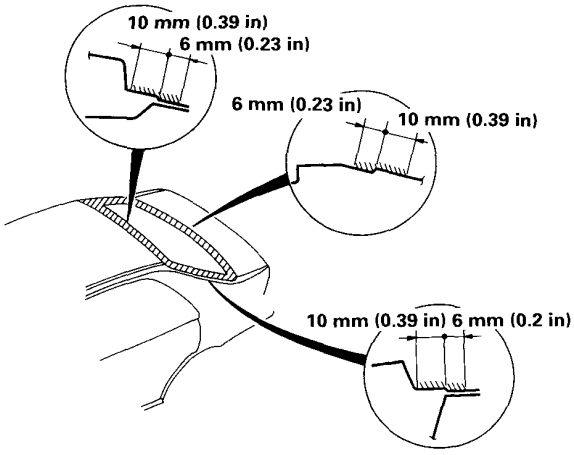
: Apply glass primer here.



9. With a sponge, apply a light coat of body primer to the original adhesive remaining around the rear window opening flange. Let the body primer dry for at least 10 minutes.

   NOTE:
   - Do not apply glass primer to the body, and be careful not to mix up glass and body primer sponges.
   - Never touch the primed surfaces with your hands.

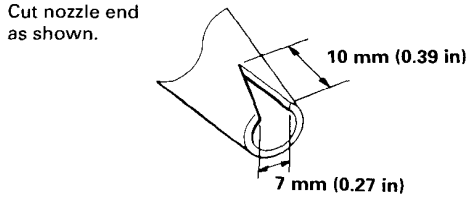
   : **Apply body primer here.**



10. Thoroughly mix the adhesive and hardener together on a glass or metal plate with a putty knife. Follow the instructions that came with the adhesive.

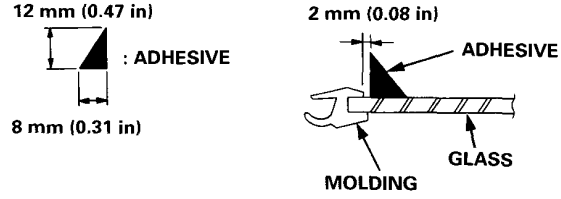
    NOTE: Clean the plate with a sponge and alcohol before mixing.

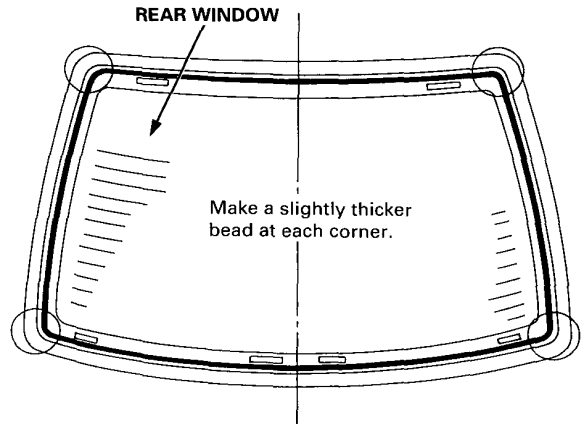
11. Before filling a cartridge, cut the end of the nozzle as shown.



12. Pack adhesive into the cartridge without air pockets to ensure continuous delivery. Put the cartridge in a caulking gun and run a bead of adhesive around the edge of the rear window as shown.

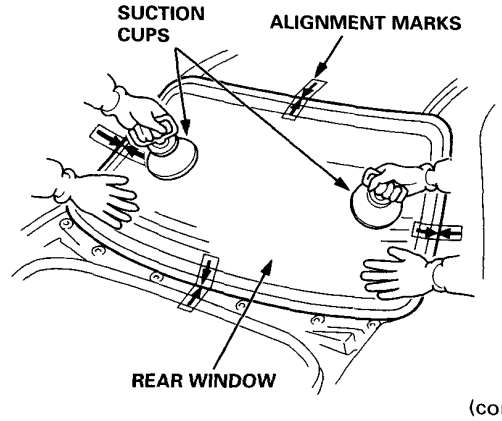
    NOTE: Apply the adhesive within 30 minutes after applying the glass primer.





13. Use suction cups to hold the rear window over the opening, align it with the alignment marks made in step 7 and set it down on the adhesive. Lightly push on the rear window until its edges are fully seated on the adhesive all the way around.

    NOTE: Do not close or open the doors until adhesive is dry.



(cont'd)

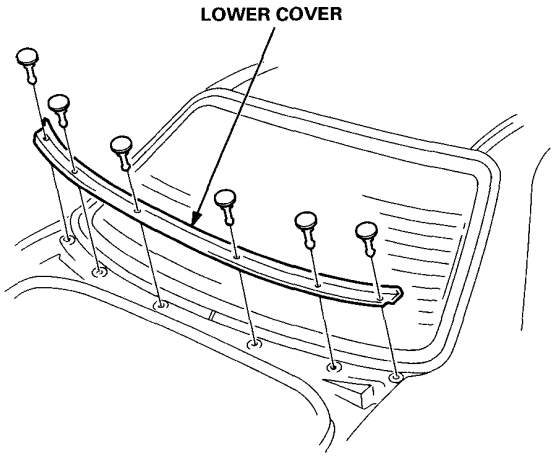
Rear Window

Installation (cont'd)

14. Scrape or wipe the excess adhesive off with a putty knife or towel.

    NOTE: To remove adhesive from a painted surface or the rear window, use a soft shop towel dampened with alcohol.

15. Install the lower cover.



16. Let the adhesive dry for at least one hour, then spray water over the rear window and check for leaks. Mark leaking areas and let the rear window dry, then seal with sealant.

    NOTE: Let the car stand for at least four hours after rear window installation. If the car has to be used within the first four hours, it must be driven slowly.

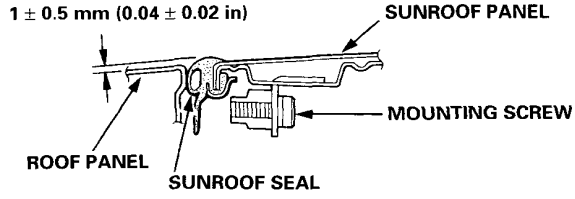
17. Raise the headliner back up into position then install:
    - Rear pillar trim panel
    - Rear shelf
    - Rear seat-back

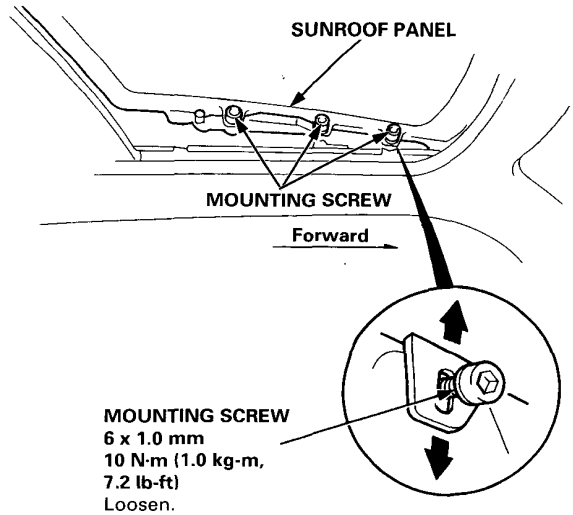
Sunroof

Sunroof Panel/Glass Height Adjustment

The roof panel should be even with the sunroof seal, to within 1 ± 0.5 mm (0.04 ± 0.02 in) all the way around. If not, slide the sunshade back (glass type), and:

1. Tilt-up the sunroof panel or glass.
2. Remove the roof liner (panel type).
3. Loosen the mounting screws and adjust the sunroof panel or glass.
4. Repeat on opposite side if necessary.
5. Side-to-side fit of sunroof seal can be adjusted by loosening the sunroof frame mounting bolts and moving the frame right or left and forward or backward by hand.

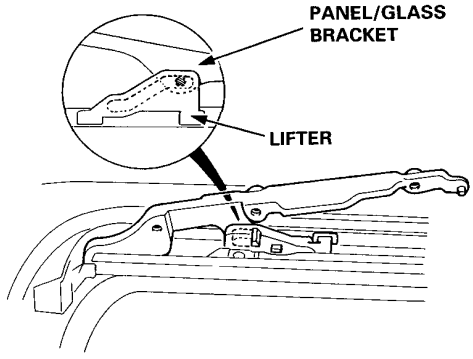




Rear Edge Closing Adjustment

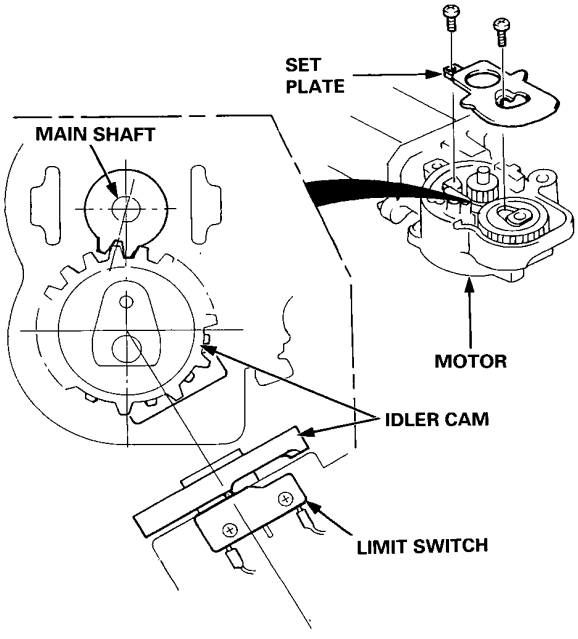
Open the sunroof panel or glass about a foot, then close it to check where rear edge begins to rise. If it rises too soon and seats too tightly against the roof panel, or too late and does not seat tightly enough, adjust it.

1. Remove the sunroof panel or glass.
2. Remove the motor.
3. Align the tilt-up position of the lifter on each side.



4. Check that the alignment left and right, then install the motor.

   NOTE: If necessary, check the tilt-up position of motor (idler cam) as shown.



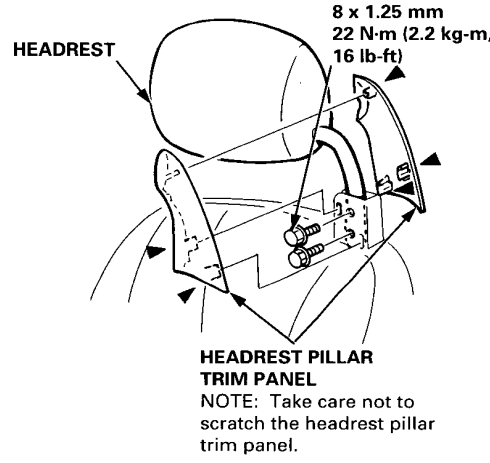
Front Seat Replacement

NOTE: Take care not to scratch the seat covers and body.

1. Remove the front seat, then take it out from the door opening.
2. Remove the recline cover and center cover.
3. Remove the clips from the seat-back, then fold the seat cover back.
4. Remove the headrest.

   Fixed type (4D, KB model):

   ►: Clip locations, 5


HEADREST
8 x 1.25 mm
22 N·m (2.2 kg-m, 16 lb-ft)
HEADREST PILLAR TRIM PANEL
NOTE: Take care not to scratch the headrest pillar trim panel.

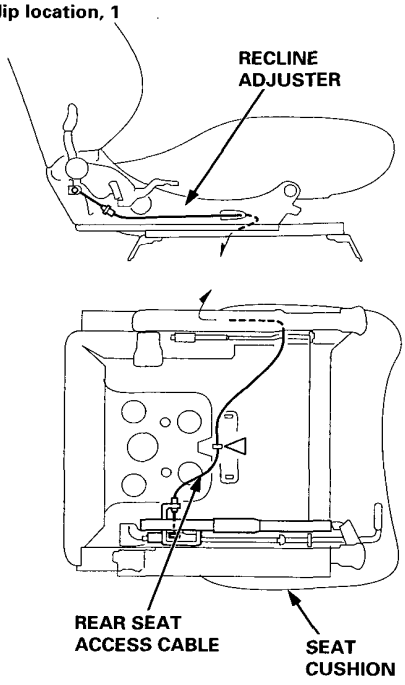
5. Remove the heater relay, and detach the wire harness (heated seat for KS model).

(cont'd)

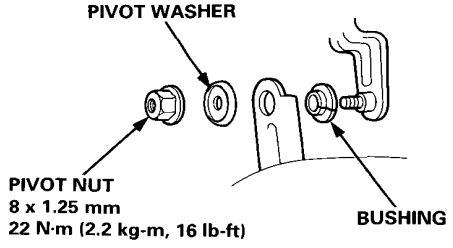
Seat

Front Seat Replacement (cont'd)

6. If so equipped, disconnect the rear seat access cable (3D, passenger's).
   ▷: **Clip location, 1**



7. Remove the pivot nut.



8. Remove the seat-back and seat cushion from the seat tracks and recline adjuster.

9. Installation is the reverse of the removal procedure.

   NOTE:
   - To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the frame before securing all the clips.
   - Apply grease to the moving surfaces.

Dashboard

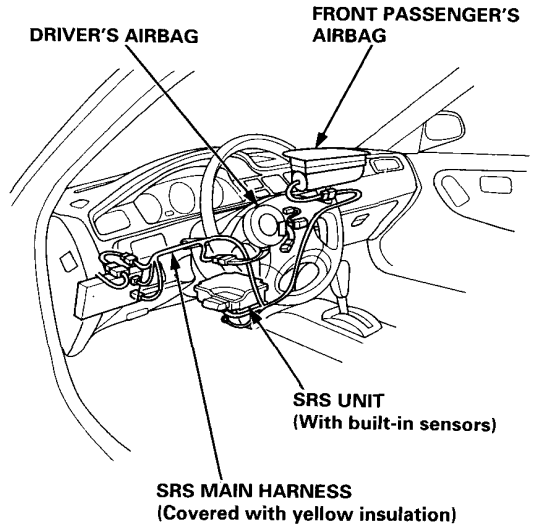
Replacement

KB model:

SRS wire harnesses are routed near the dashboard and steering column.

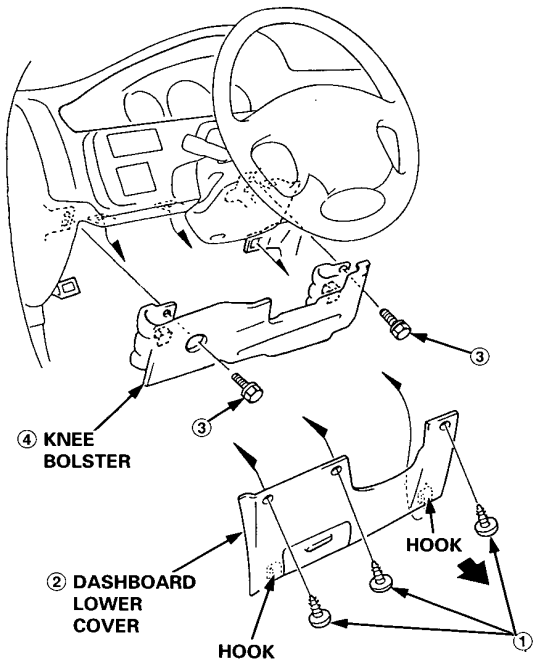
CAUTION:
- **All SRS wire harnesses are covered with yellow insulation.**
- **Replace the entire affected SRS harness assembly if it has an open circuit or damaged wiring.**
- **Before disconnecting the SRS wire harness, turn the ignition switch OFF, disconnect the battery negative cable, then disconnect the positive cable. and wait at least three minutes.**

SRS Type III only:
- **Whenever the ignition switch is ON (II), or has been turned OFF for less than three minutes, be careful not to bump the SRS unit; the airbags could accidentally deploy and cause damage or injuries.**
- **Before you disconnect any part of an SRS wire harness, connect the short connectors (RED) to the airbags.**
- **Refer to additional precautions beginning on page 23-21 in the SRS sub-section.**



1. To remove the dashboard, first remove the:
   - Front seats
   - Center lower cover
   - Glove box

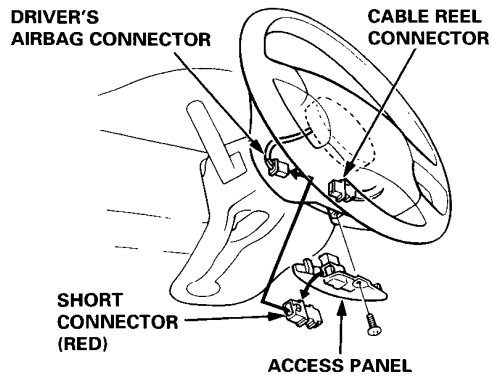
2. Remove the dashboard lower cover and knee bolster.



3. Lower the steering column (see section 17).

⚠ WARNING To avoid accidental deployment and possible injury, always install the short connector on the airbag connector when the SRS wire harness is disconnected.

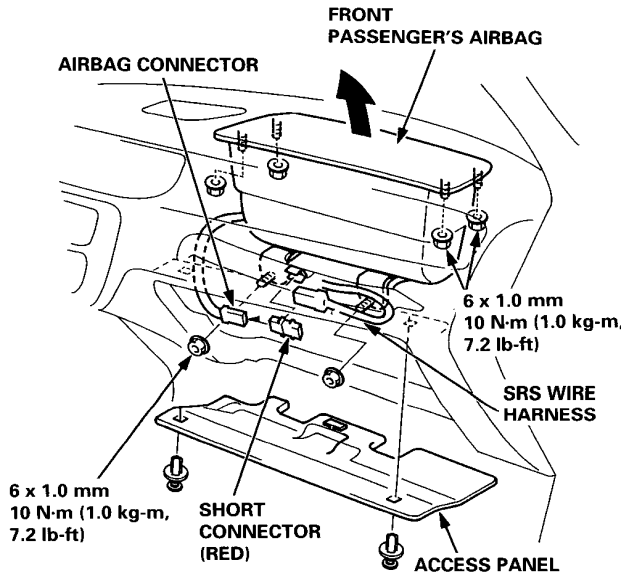
NOTE: Before lowering the steering column, remove the access panel, then disconnect the connector between the cable reel and driver's airbag. Connect the short connector (RED) to the driver's airbag connector (see section 23).



4. Remove the access panel.
Remove the nuts, then carefully remove the front passenger's airbag.

⚠ WARNING To avoid accidental deployment and possible injury, always install the carefully short connector on the airbag connector when the SRS wire harness is disconnected.

NOTE: Disconnect the connector between the front passenger's airbag and SRS wire harness. Connect the short connector (RED) to the airbag connector (see section 23).


FRONT PASSENGER'S AIRBAG
AIRBAG CONNECTOR
6 x 1.0 mm 10 N·m (1.0 kg-m, 7.2 lb-ft)
SRS WIRE HARNESS
6 x 1.0 mm 10 N·m (1.0 kg-m, 7.2 lb-ft)
SHORT CONNECTOR (RED)
ACCESS PANEL

5. Remove the access panels on both side and the upper air vent.

6. Remove the power mirror control switch, then disconnect the connector.

7. Disconnect the connectors and air mix control cable.

8. Remove the dashboard mounting bolts, then lift and remove the dashboard.

9. Installation is the reverse of the removal procedure.

Rear Emblems

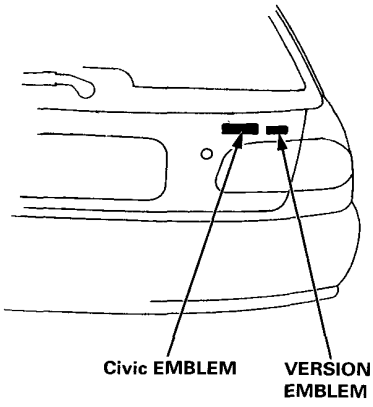
Installation

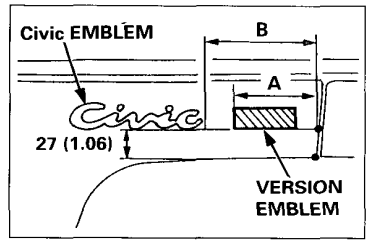
Apply the emblems where shown.

NOTE:
- Before applying, clean the body surface with a sponge dampened in alcohol.
- After cleaning, keep oil, grease or water from getting on the surface.
- When applying, make sure there are no wrinkles in the emblems.

Attachment Points (Reference):

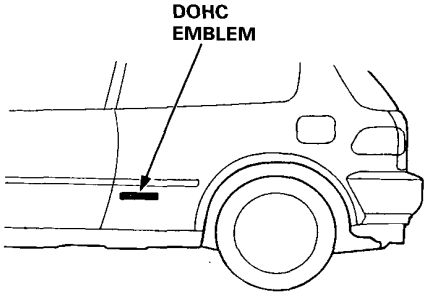
3D:



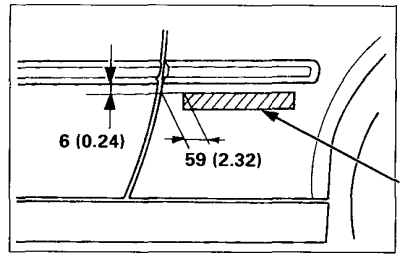


Unit: mm (in)

Emblem	A	B
DX	94 (3.7)	105 (4.13)
Si	67.5 (2.66)	78.5 (3.09)
VEi	88.5 (3.48)	105.5 (4.15)
DXi	107 (4.21)	118 (4.65)
LSi	94 (3.7)	105 (4.13)
ESi	95 (3.74)	106 (4.17)
VTi	88.5 (3.48)	105.5 (4.15)
GLi	94 (3.7)	105 (4.13)
EX	90 (3.54)	101 (3.98)
EL	84.5 (3.33)	95.5 (3.76)

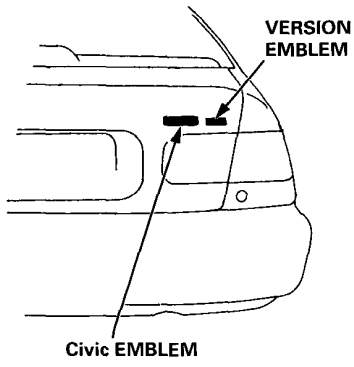


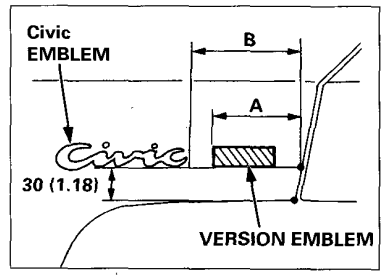
Si (KP, KT models)



4D:

Unit: mm (in)

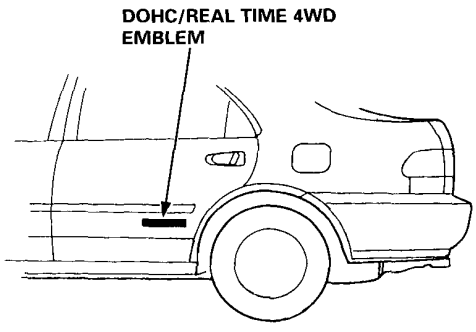




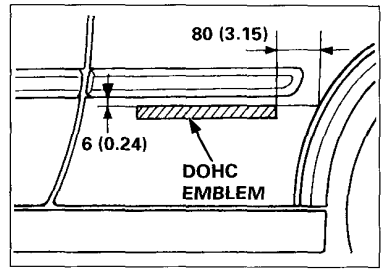
Emblem	A	B
DX	92 (3.62)	103 (4.06)
EX	88 (3.46)	99 (3.9)
DXi	104.5 (4.11)	115.5 (4.55)
VEi	89.5 (3.52)	103 (4.06)
LSi	92 (3.62)	103 (4.06)
ESi	93 (3.66)	104 (4.09)
VTi	86 (3.39)	103 (4.06)
GLi	93 (3.39)	104 (4.09)
Si	65 (2.56)	76 (2.99)
EL	81 (3.19)	92 (3.62)
RTSi	116.5 (4.59)	127.5 (5.02)

KR model

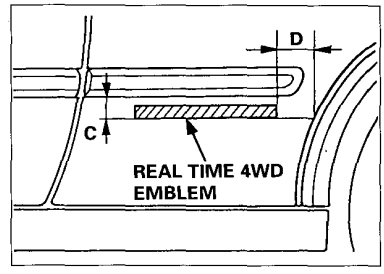
Emblem	A	B
EX	86 (3.39)	111.5 (4.39)



Si (KP, KT models)



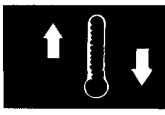
RTSi



Emblem	C	D
R	24.5 (0.96)	63.5 (2.5)
L	24.5 (0.96)	58 (2.28)

Heater and Air Conditioning

Air Conditioning 22-1



Outline of Model Changes

Due to the introduction of new refrigerant HFC-134a (R-134a), part descriptions, warnings and handling information were rewritten accordingly.

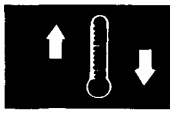
Air Conditioning

Description
- Outline 22-2

Compressor
- Relief Valve Replacement 22-3

A/C Service Tips 22-4

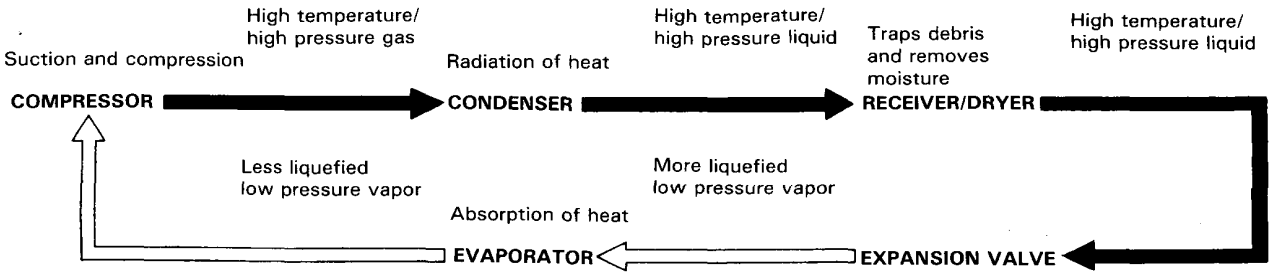
A/C System Service
- Discharge 22-5
- Evacuation 22-6
- Charging 22-7
- Leak Test 22-8
- Performance Test 22-9

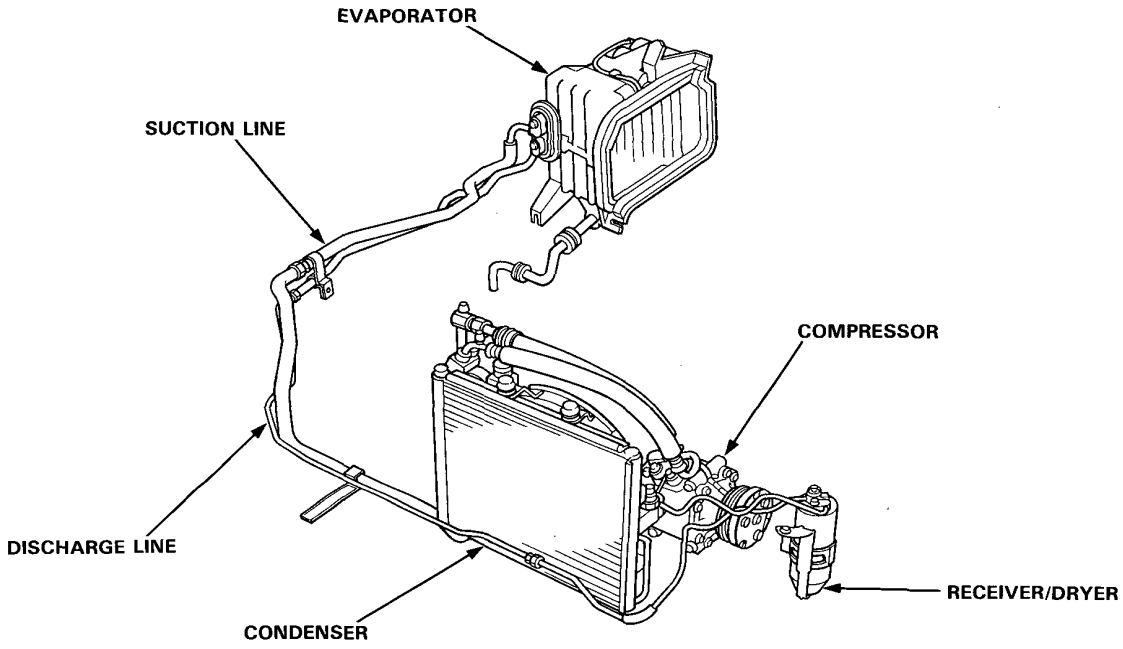


Description

Outline

The air conditioning system delivers cooled air into the passenger compartment by circulating refrigerant through the system as shown below.





This car uses HFC-134a (R-134a) refrigerant which does not contain chlorofluorocarbons. Pay attention to the following service items:

- Do not mix refrigerants CFC-12 (R-12) and HFC-134a (R-134a). They are not compatible.
- Use only the recommended polyalkyleneglycol (PAG) refrigerant oil (see NOTE below) designed for the R-134a compressor. Intermixing the recommended (PAG) refrigerant oil with any other refrigerant oil will result in compressor failure.

NOTE: Each compressor type uses different refrigerant oil.
Nippondenso: ND-OIL8 (P/N 38899-PR7-003)
Sanden: SP-10 (P/N 38899-P13-003)
Matsushita: GU10 (P/N 38899-P08-003)

- All A/C system parts (compressor, discharge line, suction line, evaporator, condenser, receiver/dryer, expansion valve, O-rings for joints) have to be proper to refrigerant R-134a. Do not confuse with R-12 parts.
- Use a halogen gas leak detector designed for refrigerant R-134a.
- Use a vacuum pump adapter which is equipped with a check valve to prevent the backflow of the vacuum pump oil.
- Separate the manifold gauge sets (pressure gauges, hoses, joints) for refrigerants R-12 and R-134a. Do not confuse them.

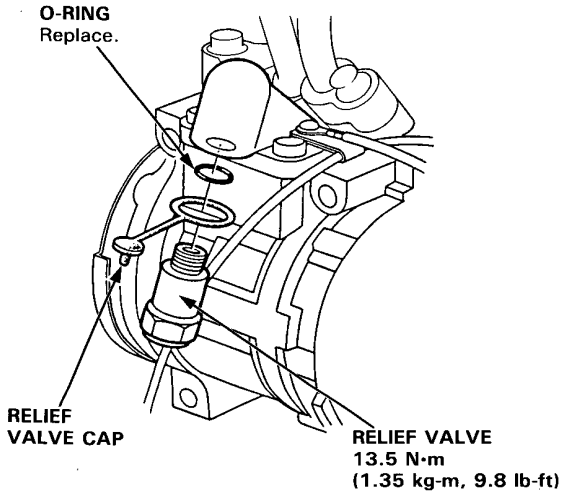
Relief Valve Replacement

1. Discharge the refrigerant. (see page 22-5)
2. Remove the relief valve and the O-ring from the compressor.

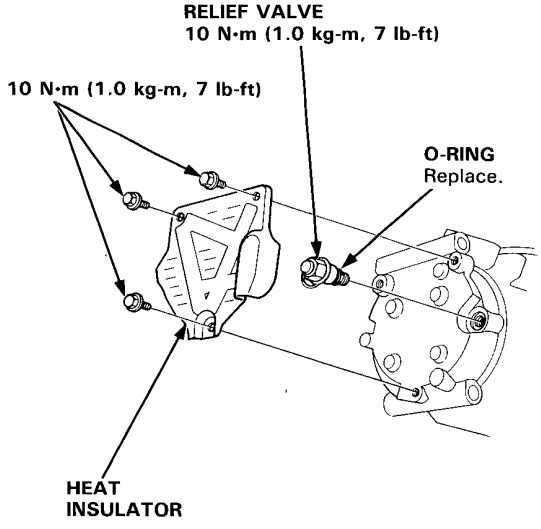
   NOTE: Be sure to use the right O-ring for HFC-134a (R-134a) to avoid leakage.

   CAUTION: Be careful not to spill compressor oil, and make sure there is no foreign matter in the system.

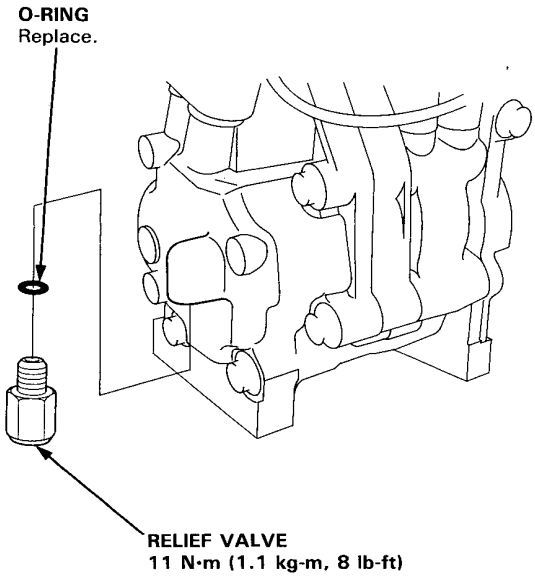
Nippondenso:



Sanden:



Matsushita:



3. Clean the mating surfaces.
4. Replace the O-ring at the relief valve with a new one, and apply a thin coat of refrigerant oil (see NOTE below) before installing the relief valve.

   NOTE:
   - Each compressor type uses different refrigerant oil.
     Nippondenso: ND-OIL8 (P/N 38899-PR7-003)
     Sanden: SP-10 (P/N 38899-P13-003)
     Matsushita: GU10 (P/N 38899-P08-003)
   - Do not return the oil to the container once it is dispensed and never mix it with other refrigerant oils to avoid contamination.
   - Immediately after using the oil, replace the cap on the container and seal it to avoid moisture absorption.
   - Do not spill the refrigerant oil on the car; it may damage the paint. If the refrigerant oil contacts the paint, wash it off immediately.
5. Install and tighten the relief valve.
6. Charge with R-134a refrigerant to the system and check for leaks.
7. Insert the cap into the top of the relief valve.

A/C Service Tips

The air conditioning system uses HFC-134a (R-134a) refrigerant and polyalkyleneglycol (PAG) refrigerant oil (see NOTE below), which are not compatible with CFC-12 (R-12) refrigerant and mineral oil. Do not use R-12 refrigerant or mineral oil in this system and do not attempt to use R-12 servicing equipment; damage to the air conditioning system or your servicing equipment will result.

NOTE: Each compressor type uses different refrigerant oil.
Nippondenso: ND-OIL8 (P/N 38899-PR7-003)
Sanden: SP-10 (P/N 38899-P13-003)
Matsushita: GU10 (P/N 38899-P08-003)

Separate the manifold gauge sets (pressure gauges, hoses, joints) for refrigerants R-12 and R-134a. Do not confuse them.

⚠ WARNING When handling refrigerant (R-134a):

- **always wear eye protection.**
- **do not let refrigerant get on your skin or in your eyes. If it does:**
  - **do not rub your eyes or skin.**
  - **splash large quantities of cool water into your eyes or on your skin.**
  - **rush to a physician or hospital for immediate treatment. Do not attempt to treat it yourself.**
- **keep refrigerant containers (cans of R-134a) stored below 40°C (104°F).**
- **keep away from open flame. Refrigerant, although non-flammable, will produce poisonous gas if burned.**
- **work in well-ventilated area. Refrigerant evaporates quickly, and can force all the air out of a small, enclosed area.**

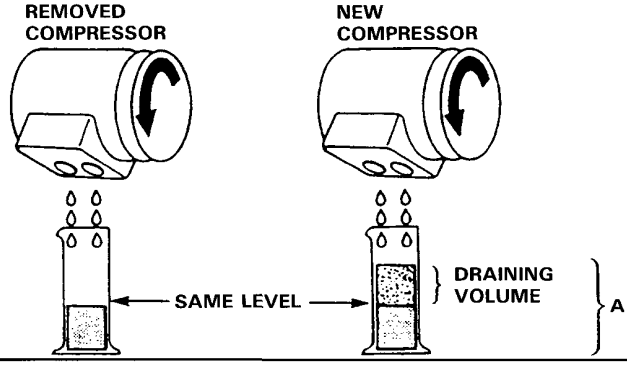
1. Always disconnect the negative cable from the battery whenever replacing air conditioning parts.
2. Keep moisture and dust out of the system. When disconnecting any lines, plug or cap the fittings immediately; don't remove the caps or plugs until just before you reconnect each line.
3. Before connecting any hose or line, apply a few drops of refrigerant oil (see above NOTE) to the O-ring.
4. When tightening or loosening a fitting, use a second wrench to support the matching fitting.
5. When discharging the system, don't let refrigerant escape too fast; it will draw the compressor oil out of the system.
6. Add refrigerant oil (see above NOTE) after replacing the following parts:

NOTE:

- Do not return the oil to the container once it is dispensed and never mix with other refrigerant oils to avoid contamination.
- Immediately after using the oil, replace the cap on the container and seal it to avoid moisture absorption.
- Do not spill the refrigerant oil on the car; it may damage the paint. If the refrigerant oil contacts the paint, wash it off immediately.

	Nippondenso:	Sanden:	Matsushita:
Condenser	25 mℓ (5/6 fl. oz, 0.9 Imp. oz)	20 mℓ (2/3 fl. oz, 0.7 Imp. oz)	15 mℓ (1/2 fl. oz, 0.5 Imp. oz)
Evaporator	60 mℓ (2 fl. oz, 2.1 Imp. oz)	45 mℓ (1 1/2 fl. oz, 1.6 Imp. oz)	35 mℓ (1 1/6 fl. oz, 1.2 Imp. oz)
Line or hose	10 mℓ (1/3 fl. oz, 0.4 Imp. oz)	10 mℓ (1/3 fl. oz, 0.4 Imp. oz)	10 mℓ (1/3 fl. oz, 0.4 Imp. oz)
Receiver/Dryer ...	10 mℓ (1/3 fl. oz, 0.4 Imp. oz)	10 mℓ (1/3 fl. oz, 0.4 Imp. oz)	10 mℓ (1/3 fl. oz, 0.4 Imp. oz)
Leakage repair ...	25 mℓ (5/6 fl. oz, 0.9 Imp. oz)	25 mℓ (5/6 fl. oz, 0.9 Imp. oz)	25 mℓ (5/6 fl. oz, 0.9 Imp. oz)

Compressor ..... On compressor replacement, subtract the volume of oil drained from the removed compressor from A, and drain the calculated volume of oil from the new compressor:
A—Volume of removed compressor = Draining volume.
NOTE: Even if no oil is drained from the removed compressor, don't drain more than 50 mℓ (1 2/3 fl. oz, 1.8 Imp. oz) from the new compressor.



A:
Nippondenso: 120 mℓ (4 fl. oz, 4.2 Imp. oz)
Sanden: 120 mℓ (4 fl. oz, 4.2 Imp. oz)
Matsushita: 140 mℓ (4 2/3 fl. oz, 4.9 Imp. oz)

Discharge

⚠ WARNING

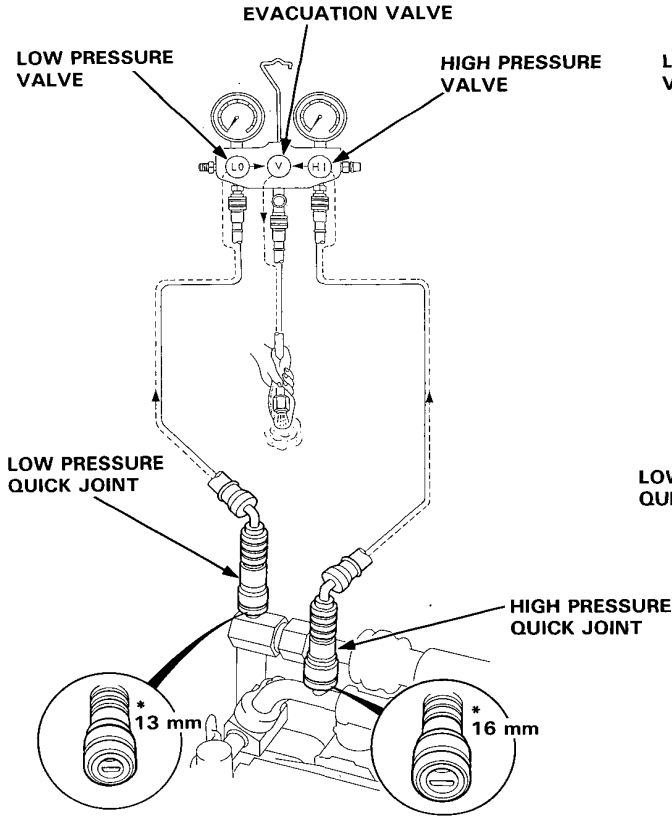
- **Keep away from open flames. The refrigerant, although nonflammable, will produce a poisonous gas if burned.**
- **Work in a well-ventilated area. Refrigerant evaporates quickly, and can force all the air out of a small enclosed area.**

NOTE: Only use a gauge set for refrigerant HFC-134a (R-134a).

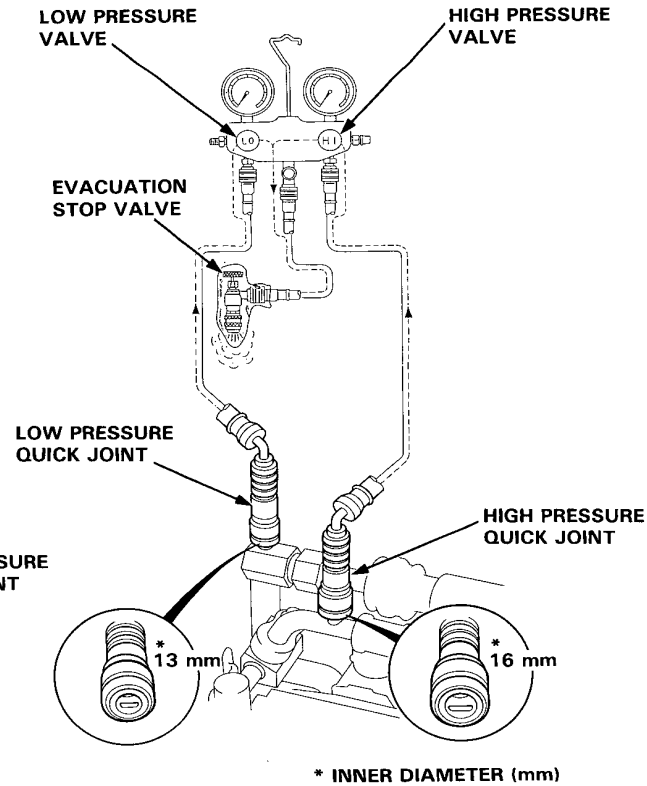
1. Connect the R-134a gauges as shown.
2. Disconnect the center hose of the gauge set and place the free end in a shop towel.
3. Open the evacuation valve (in case of two valve gauge: open the evacuation stop valve).
4. Slowly open the high pressure valve slightly to let refrigerant flow from the center hose only. Do not open the valve too wide. Check the shop towel to make sure no oil is being discharged with the refrigerant.

   CAUTION: If you allow refrigerant to escape too fast, compressor oil will be drawn out of the system.
5. After the high pressure gauge reading has dropped below 1,000 kPa (10 kg/cm², 142 psi), open the low side valve to discharge both high and low sides of the system.
6. Note the gauge reading, and as system pressure drops, gradually open both high and low side valves fully until both gauges indicate 0 kPa (0 kg/cm² 0 psi).

THREE VALVE GAUGE



TWO VALVE GAUGE



* INNER DIAMETER (mm)

Evacuation

NOTE:
- Only use a gauge set for refrigerant HFC-134a (R-134a).
- Use a vacuum pump adapter which is equipped with a check valve to prevent the backflow of the vacuum pump oil.

1. When an A/C System has been opened to the atmosphere, such as during installation or repair, it must be evacuated using a R-134a refrigerant vacuum pump. (If the system has been open for several days, the receiver/dryer should be replaced.)

2. Connect a R-134a refrigerant gauge, pump and refrigerant containers (cans of R-134a) as shown.

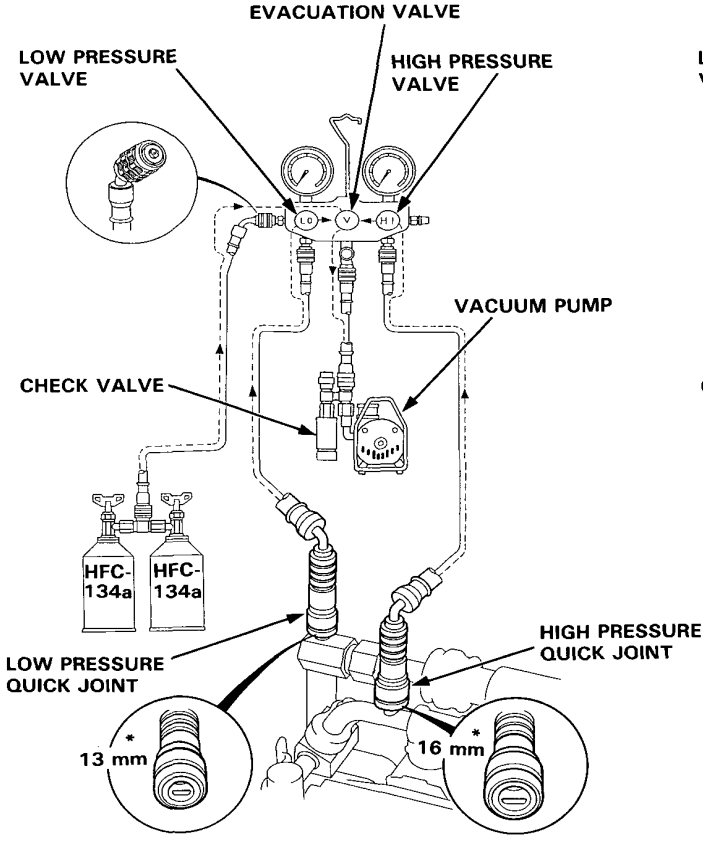
   NOTE: Do not open the cans.

3. Start the pump, then open both pressure valves, and the evacuation valve (in case of two valve gauge: open the evacuation stop valve). Run the pump for about 15 minutes. Close both pressure valves and the evacaution valve (in case of two valve gauge: close the evacuation stop valve) and stop the pump. The low pressure gauge should indicate above 700 mmHg (27 in-Hg) and remain steady with the valves closed.

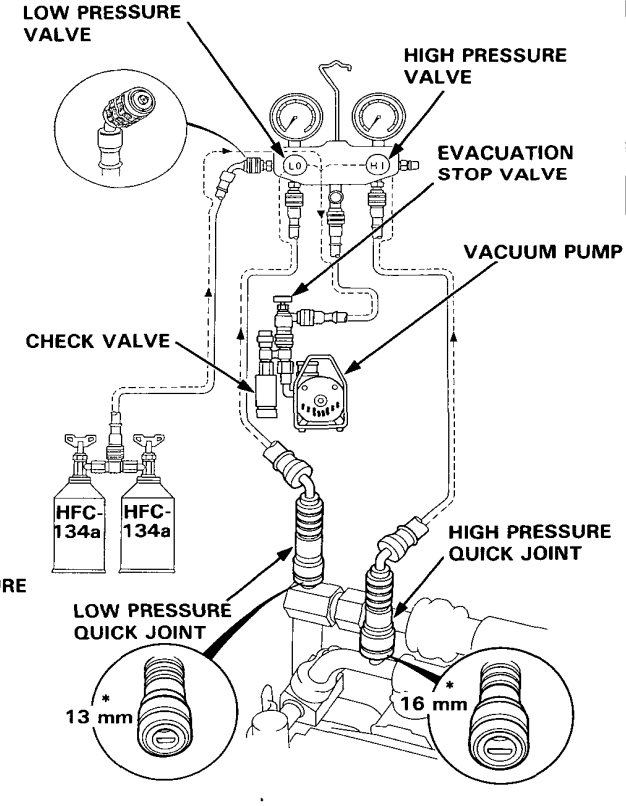
   NOTE: If low pressure does not reach more than 700 mmHg (27 in-Hg) in 15 minutes, there is probably a leak in the system. Check for leaks, and repair (see Leak Test).

4. If there are no leaks, open the valves and continue pumping for at least another 15 minutes. Then close both valves and stop the pump.

THREE VALVE GAUGE



TWO VALVE GAUGE



* INNER DIAMETER (mm)

Charging

NOTE:
- Only use a gauge set for refrigerant HFC-134a (R-134a).
- Use a vacuum pump adapter which is equipped with a check valve to prevent the backflow of the vacuum pump oil.

⚠WARNING When handling refrigerant (R-134a):
- **always wear eye protection.**
- **do not let refrigerant get on your skin or in your eyes. If it does:**
  - **— do not rub your eyes or skin.**
  - **— splash large quantities of cool water into your eyes or on your skin.**
  - **— rush to a physician or hospital for immediate treatment. Do not attempt to treat it yourself.**
- **keep refrigerant containers (cans of R-134a) stored below 40°C (104°F).**
- **keep away from open flame. Refrigerant, although non-flammable, will produce poisonous gas if burned.**
- **work in well-ventilated area. Refrigerant evaporates quickly, and can force all the air out of a small, enclosed area.**

CAUTION: Do not overcharge the system; the compressor will be damaged.

1. After the leak test, check that the high pressure valve is closed and start the engine.

   NOTE: Run the engine below 1,500 rpm (min^{-1}).

2. Open the front door.
   Turn the A/C switch ON.
   Set the temperature control lever to MAX. COOL.
   Push the mode control button to VENT.
   Slide the heater fan switch to MAX.

3. Open the low pressure valve and charge with R-134a refrigerant.

   ⚠WARNING
   - **Do not open the high pressure valve.**
   - **Do not turn the cans upside down.**

4. Charge the system with refrigerant capactiy.
   Refrigerant capacity: 550^{+0}_{-50} g ($19.4^{+0}_{-1.8}$ oz)

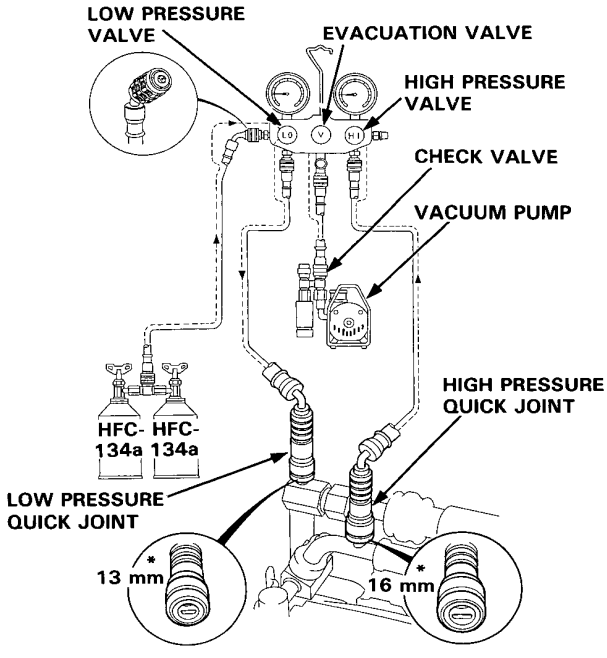
5. When fully charged, close the low pressure valve and the refrigerant cans. Check the system.

6. Stop the engine and disconnect the charge hose quickly.

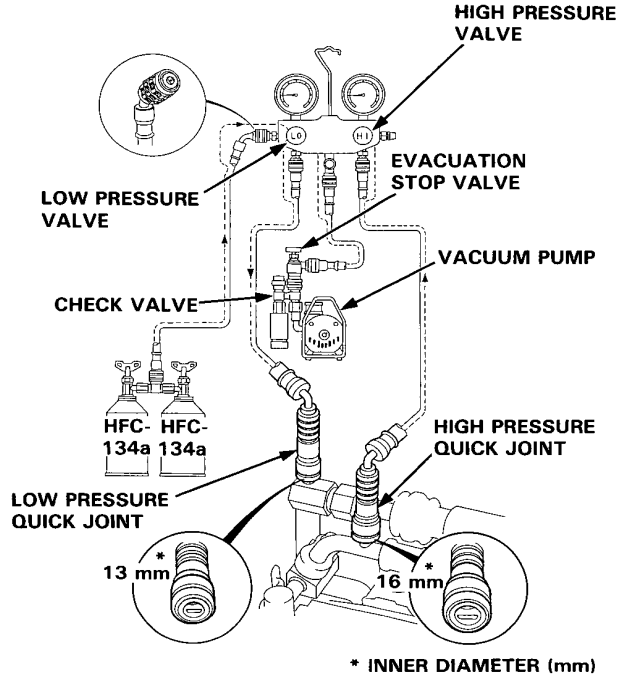
7. Check the system for leaks using a leak detector proper to refrigerant R-134a.

   NOTE: Particularly check for leaks around the compressor, condenser, and receiver/dryer.

THREE VALVE GAUGE



TWO VALVE GAUGE



* INNER DIAMETER (mm)

Leak Test

NOTE:
- Only use a gauge set for refrigerant HFC-134a (R-134a).
- Use a vacuum pump adapter which is equipped with a check valve to prevent the backflow of the vacuum pump oil.

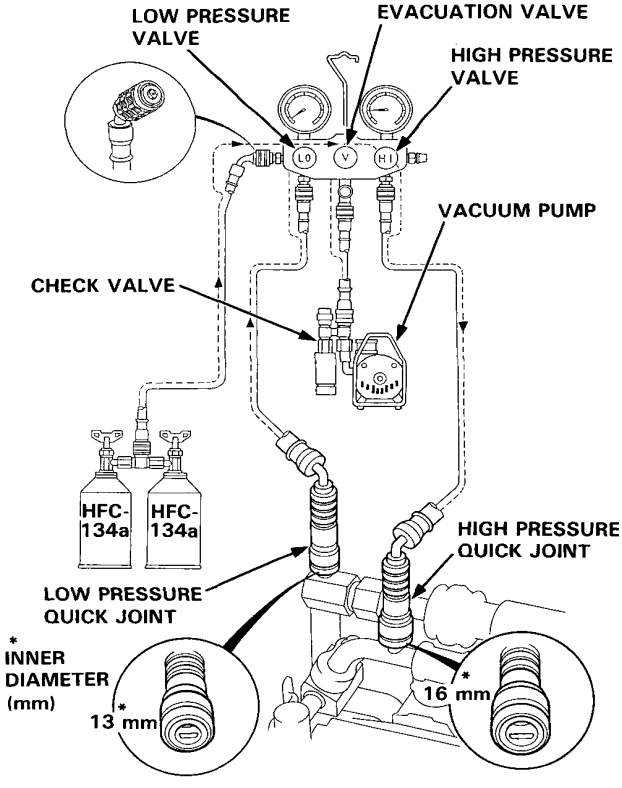
⚠ WARNING When handling refrigerant (R-134a):
- **always wear eye protection.**
- **do not let refrigerant get on your skin or in your eyes. If it does:**
  - **— do not rub your eyes or skin.**
  - **— splash large quantities of cool water into your eyes or on your skin.**
  - **— rush to a physician or hospital for immediate treatment. Do not attempt to treat it yourself.**
- **keep refrigerant containers (cans of R-134a) stored below 40°C (104°F).**
- **keep away from open flame. Refrigerant, although non-flammable, will produce poisonous gas if burned.**
- **work in well-ventilated area. Refrigerant evaporates quickly, and can force all the air out of a small, enclosed area.**

1. Close the evacuation valve (in case of two valve gauge: close the evacuation stop valve).
2. Open the cans.
3. Open the high pressure valve to charge the system to about 100 kPa (1.0 kg/cm², 14 psi), then close it.

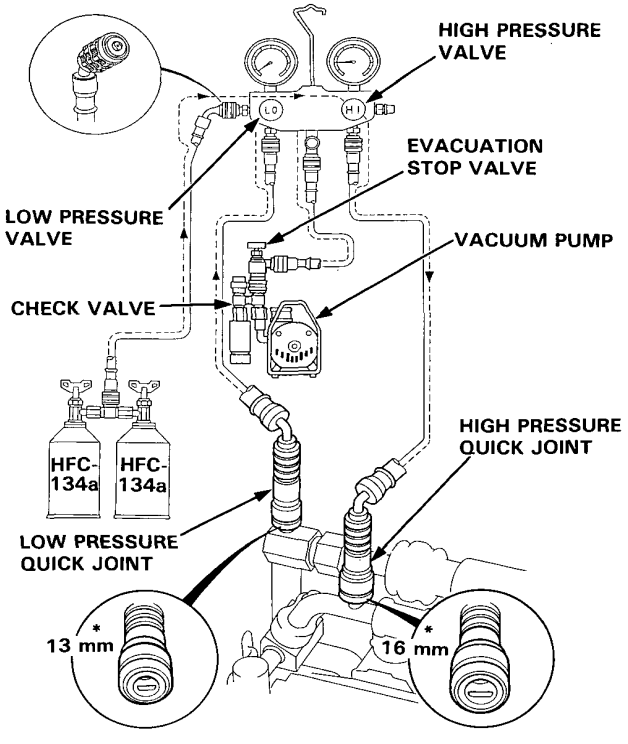
   NOTE: Close the low pressure valve.
4. Check the system for leaks using a leak detector proper to refrigerant R-134a.

   NOTE: Particularly check for leaks around the compressor, condenser, and receiver/dryer.
5. If you find any leaks, tighten the joint nuts and bolts to the specified torque.
6. Recheck the system for leaks using a leak detector.
7. If you find leaks that require the system to be opened (to repair or replace hoses, fittings, etc.), release any charge in the system.
8. After checking and repairing leaks, the system must be evacuated (see System Evacuation).

THREE VALVE GAUGE



TWO VALVE GAUGE



Performance Test

The performance test will help determine if the air conditioner system is operating within specifications.

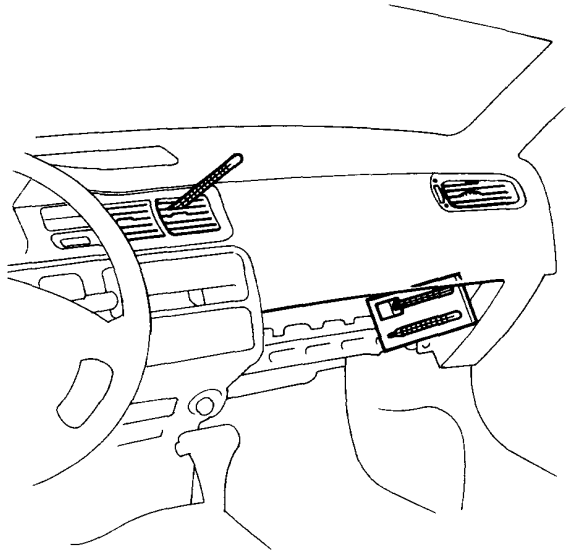
NOTE:
- Only use a gauge set for refrigerant HFC-134a (R-134a).
- Use a vacuum pump adapter which is equipped with a check valve to prevent the backflow of the vacuum pump oil.

1. Connect the R-134a gauges as shown.

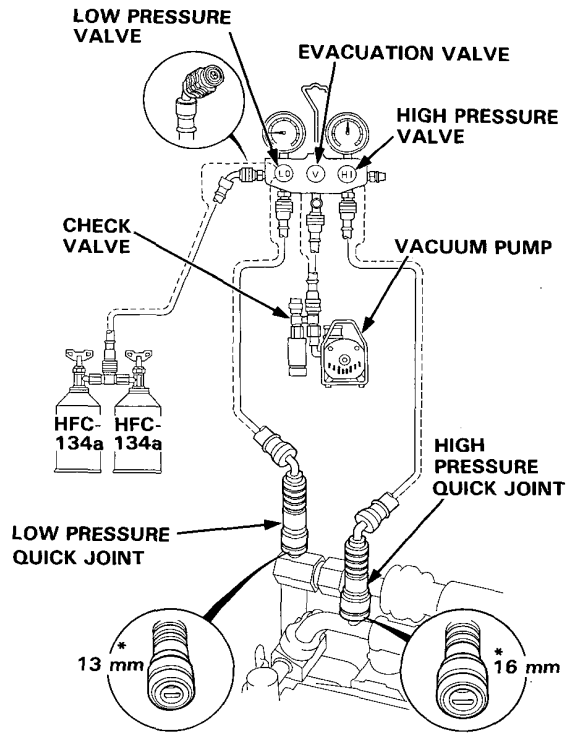
2. Insert a thermometer in the center vent outlet. Determine the relative humidity and ambient air temperature by a portable weather station or calling the local weather station.

3. Test conditions:
   - Avoid direct sunlight.
   - Open hood.
   - Open front doors.
   - Set the temperature control lever to MAX. COOL, push the mode control button to VENT, and push the recirculation button.
   - Slide the heater fan switch to MAX.
   - Run the engine at 1,500 rpm (min^{-1}).
   - No driver or passengers in vehicle.

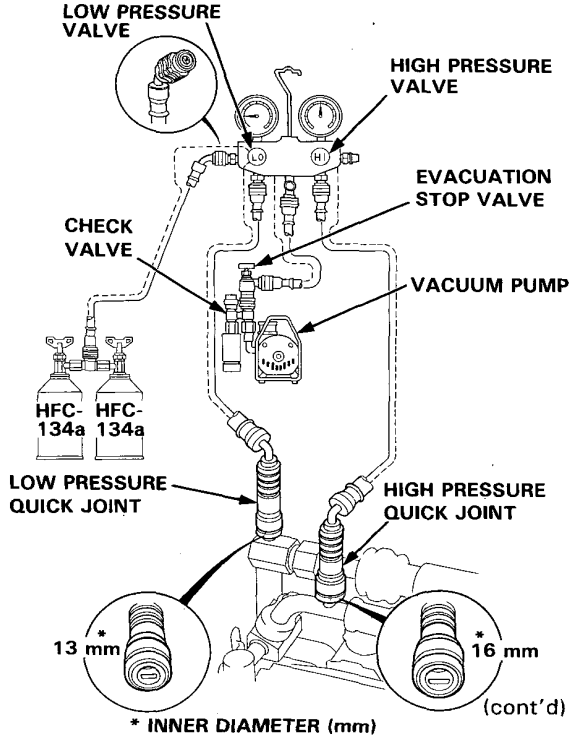
4. After running the air conditioning for 10 minutes under the above-mentioned test conditions, read the delivery temperature from the thermometer in the dash vent, and the high and low system pressures from the A/C gauges.



THREE VALVE GAUGE



TWO VALVE GAUGE



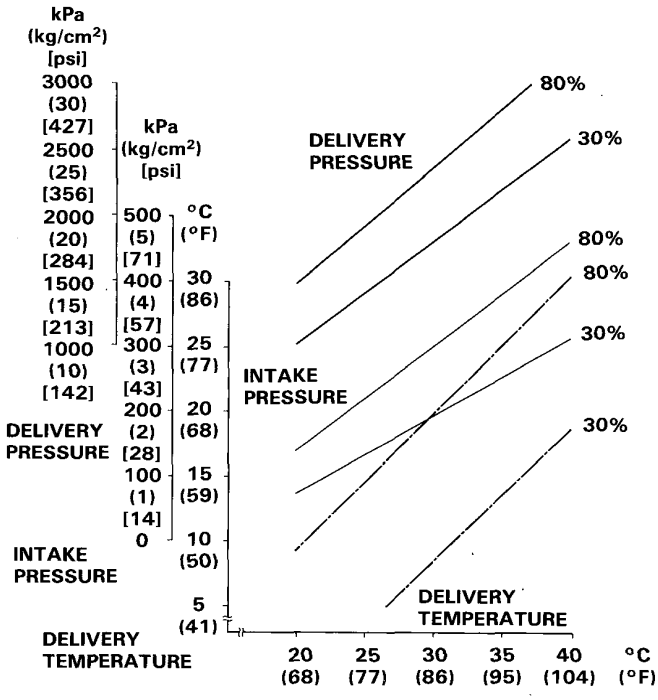
(cont'd)

* INNER DIAMETER (mm)

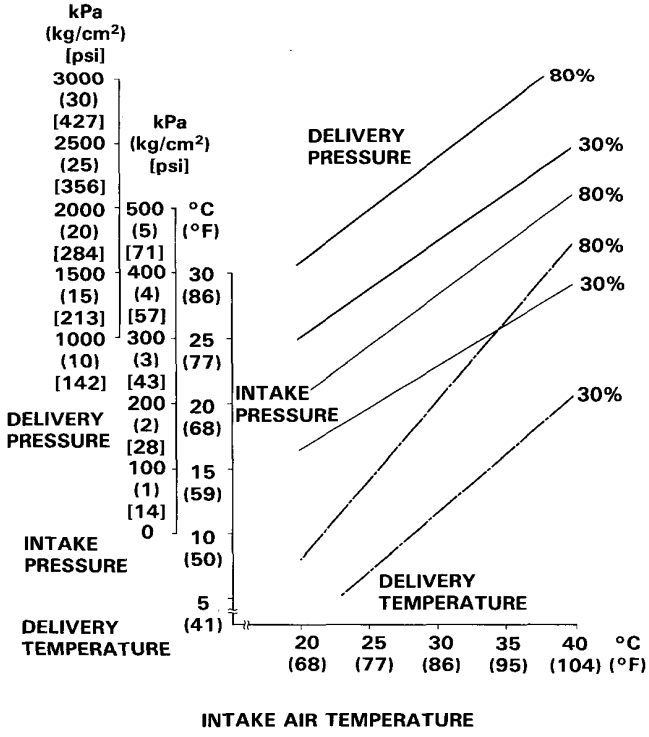
Performance Test (cont'd)

5. To complete the charts:
   - Mark the delivery temperature along the vertical line.
   - Mark the intake air temperature (ambient air temperature) along the bottom line.
   - Draw a line straight up from the air temperature to the humidity level.
   - Mark a point one line above and one line below the humidity level (10% above and 10% below the humidity level).
   - From each point, draw a horizontal line across to the delivery temperature.
   - The delivery temperature should fall between the two lines.
   - Complete the low side pressure test and high side pressure test in the same way.
   - Any measurements outside the line may indicate the need for further inspection.

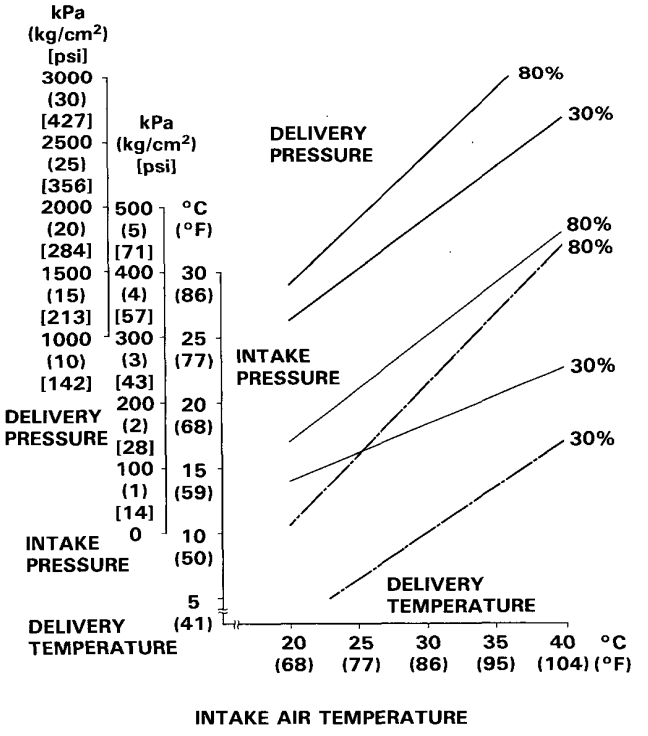
Sanden:



Nippondenso:



Matsushita:



SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

Some model versions of the Civic include a driver's airbag, located in the steering wheel hub. In addition, the KB model has a front passenger's airbag located in the dashboard above the glove box. There are two types of SRS: Type II (SRS unit is part of the airbag assembly), which is used for models without front passenger's airbag (all except KB model), and Type III (SRS unit is not part of the airbag assembly, and has built-in sensors), which is used for models with front passenger's airbag (KB model). Information necessary to safely service the SRS is included in this Shop Manual. Items marked with an asterisk (*) on the contents page include, or are located near, SRS components. Servicing, disassembling or replacing these items will require special precautions and tools, and should therefore be done by an authorized Honda dealer.

⚠ WARNING

- **To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal collision, all SRS service work must be performed by an authorized Honda dealer.**
- **Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional activation of the airbags.**
- **Do not bump the SRS unit. Otherwise, the system may fail in case of a collision, or the airbags may deploy when the ignition switch is ON (II) (SRS Type III).**
- **All SRS electrical wiring harnesses are covered with yellow insulation. Related components are located in the steering column, front console, dashboard, dashboard lower panel, and, in case of the KB model, in the dashboard above the glove box. Do not use electrical test equipment on these circuits.**
- **Service work nearby and in the areas listed below may affect the SRS and must therefore be performed by an authorized Honda dealer.**

SRS Type II:

- *Steering wheel (Be careful not to bump the steering wheel as the SRS unit (sensors), inflator, etc. are located in it.)*
- Behind the dashboard
- Under-dash fuse/relay box

SRS Type III:

- Steering wheel
- Behind the dashboard
- Under-dash fuse/relay box
- Front console
- Car stereo units and other accessories
- A/C heater

Electrical

Special Tools 23-2
Ignition System
Spark Plug Inspection 23-3
Ignition Timing Inspection and Setting 23-4
*Integrated Control Unit (KQ model)
Input Test 23-6
*Rear Window Defogger (KB model)
Component Location Index 23-10
Troubleshooting 23-12
Seat Heaters (KS model with Headlight Adjuster)
Component Location Index 23-13
Switch Removal 23-15
Switch Test 23-15
*Supplemental Restraint System (SRS) 23-17

*Read SRS precautions on page 23-21, then install the short connector(s) on the airbag(s) before working in these areas.

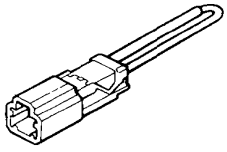
Outline of Model Changes

- Ignition System: As the engine types of KQ model have been changed, related items have been rewritten.
- Integrated Control Unit: As the integrated control unit of KQ model has been changed, related items have been rewritten.
- Items related to the newly added KB model have been included.
- Seat Heaters: As the seat heater system of some KS model has been changed, related items have been rewritten.
- Supplemental Restraint System (SRS): The SRS type III has been added.

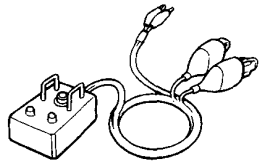
Special Tools

Ref. No.	Tool Number	Description	Q'ty.	Page Reference
①	07PAZ – 001010A	SCS Short Connector	1	23-4, 27
②*	07HAZ – SG00400	Deployment Tool	1	23-60
③*	07MAZ – SP0020A	Short Connector A Set	1	23-34
④**	07MAZ – SP00500	Test Harness B	1	23-32
⑤*	07LAZ – SL40300	Test Harness C	1	23-34
⑥	07QAZ – SR30100	Jumper Wire	4	23-32

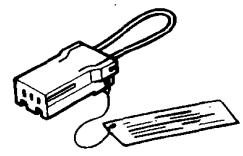
*: Included in SRS Tool Set 07MAZ – SM5000A
**: Included in SRS Tool Set 07MAZ – SL0010A



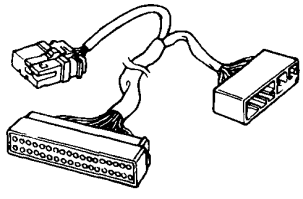
①



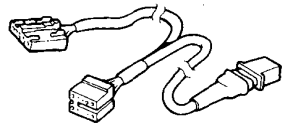
②



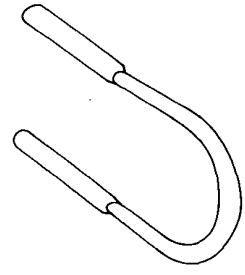
③



④



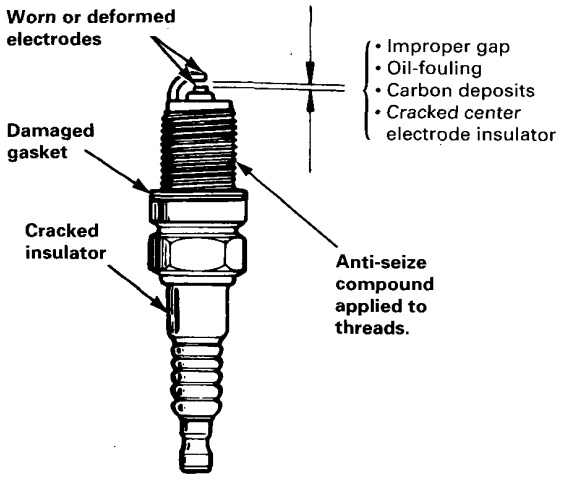
⑤



⑥

Spark Plug Inspection

1. Inspect the electrodes and ceramic insulator for:



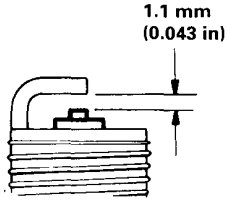
Burned or worn electrodes may be caused by:
- Advanced ignition timing
- Loose spark plug
- Plug heat range too low
- Insufficient cooling

Fouled plug may be caused by:
- Retarded ignition timing
- Oil in combustion chamber
- Incorrect spark plug gap
- Plug heat range too high
- Excessive idling/low speed running
- Clogged air cleaner element
- Deteriorated ignition coil or ignition wires

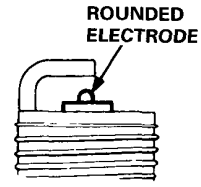
2. Adjust the gap with a suitable gapping tool.

Electrode Gap:

Standard	1.1 $^{+0}_{-0.1}$ mm (0.043 $^{+0}_{-0.004}$ in)



3. Replace the plug if the center electrode is rounded as shown below:



NOTE: Do not use spark plugs other than those listed below, because these plugs are a new type (ISO standard).

These marks are sealed on the timing belt cover.

Spark Plug

D12B1/D13B3 engine

BKR5E – 11 (NGK) K16PR – U11 (Nippondenso)	For all normal driving.
BKR6E – 11 (NGK) K20PR – U11 (Nippondenso)	For hot climates or continuous high speed driving.

D13B2/D15B2/D15B3/D15Z2/ D16A7/D16Z6/D16Z7/D16Y1 engine

BKR6E – 11 (NGK) K20PR – U11 (Nippondenso)	For all normal driving.
BKR7E – 11 (NGK) K22PR – U11 (Nippondenso)	For hot climates or continuous high speed driving.

D15B7/D15Z1 engine

ZFR5F – 11 (NGK) KJ16CR – L11 (Nippondenso)	For all normal driving.
ZFR6F – 11 (NGK) KJ20CR – L11 (Nippondenso)	For hot climates or continuous high speed driving.

D16A9/B16A2 engine

BKR6E – N11 (NGK) K20PR – L11 (Nippondenso)	For all normal driving.
BKR7E – N11 (NGK) K22PR – L11 (Nippondenso)	For hot climates or continuous high speed driving.

4. Screw the plugs into the cylinder head finger-tight, then torque them to 18 N·m (1.8 kg-m, 13 lb-ft).

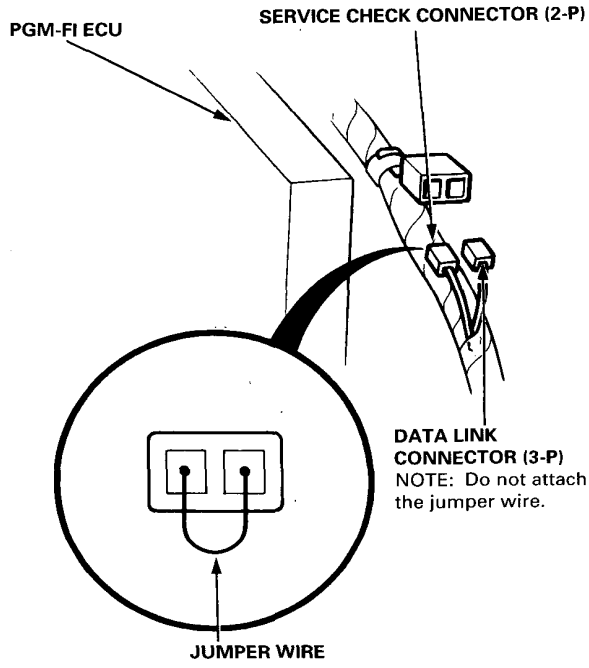
NOTE: Apply a small quantity of anti-seize compound to the plug threads before installing.

Ignition Timing Inspection and Setting (Fuel-injected Engine)

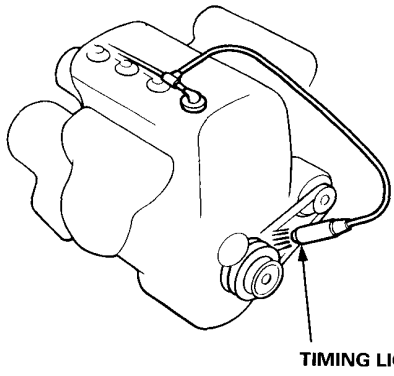
1. Start the engine and allow it to warm up (cooling fan comes on).

2. Pull out the service check connector located behind the front passenger's side kick panel. Connect the BRN and BLK terminals with a jumper wire or SCS short connector.

   NOTE: The illustration shows LHD type; RHD type is symmetrical.



3. Connect a timing light to the No. 1 ignition wire and point it toward the pointer on the timing belt cover.



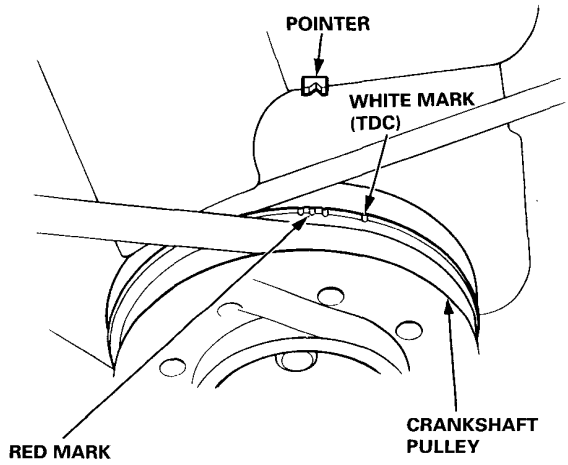
4. Adjust ignition timing, if necessary, to the following specifications:

   Ignition Timing:
   D15Z1 engine
   16° ± 2° BTDC (RED) at 600 min^{-1} (rpm)

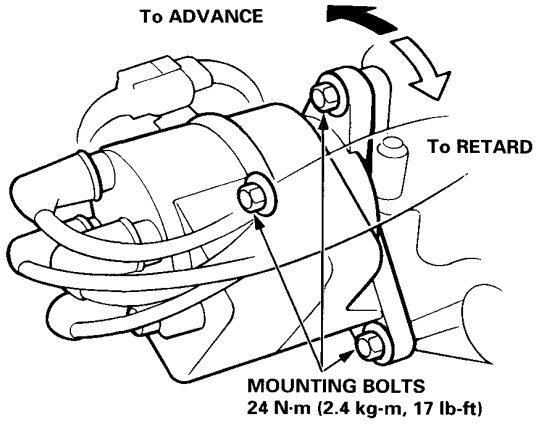
   D15B2 engine
   16° ± 2° BTDC (RED) at 810 min^{-1} (rpm)

   D15B7/D16A7/D16A9/D16Y1/
   D16Z6/D16Z7/B16A2 engine
   16° ± 2° BTDC (RED) at 750 min^{-1} (rpm)

NOTE:
- Shift lever in neutral position.
- All electrical systems are turned OFF.



5. If it is necessary to adjust the ignition timing, loosen the distributor mounting bolts, and turn the distributor housing counterclockwise to advance the timing, or clockwise to retard the timing.



6. Tighten the adjusting bolts, and recheck the timing.

7. Remove the jumper wire from the service check connector.

Ignition Timing Inspection and Setting (Cabureted Engine)

NOTE: For Ignition Timing Inspection, see page 23-102 to 23-105 of Shop Manual 62SR300.

If it is necessary, adjust ignition timing to the following specifications:

D15Z2 engine:

Initial Timing:
2° BTDC (WHT) at 800 min^{-1} (rpm)

Ignition Timing:
20° ± 2° BTDC (RED) at 800 min^{-1} (rpm)

D12B1 engine:

Initial Timing:
M/T: 0° TDC (WHT) at 800 min^{-1} (rpm)
A/T: 0° TDC (WHT) at 1,000 min^{-1} (rpm)

Ignition Timing:
M/T: 16° ± 2° (RED) at 800 min^{-1} (rpm)
A/T: 16° ± 2° (RED) at 1,000 min^{-1} (rpm)

D13B2, D13B3 engine:

Initial Timing:
2° BTDC (WHT) at 800 min^{-1} (rpm)

Ignition Timing:
20° ± 2° BTDC (RED) at 800 min^{-1} (rpm)

D15B3 engine:

Initial Timing:
M/T: 2° BTDC (WHT) at 800 min^{-1} (rpm)
A/T: 2° BTDC (WHT) at 1,000 min^{-1} (rpm)

Ignition Timing:
M/T: 20° ± 2° BTDC (RED) at 800 min^{-1} (rpm)
A/T: 12° ± 2° BTDC (RED) at 1,000 min^{-1} (rpm)

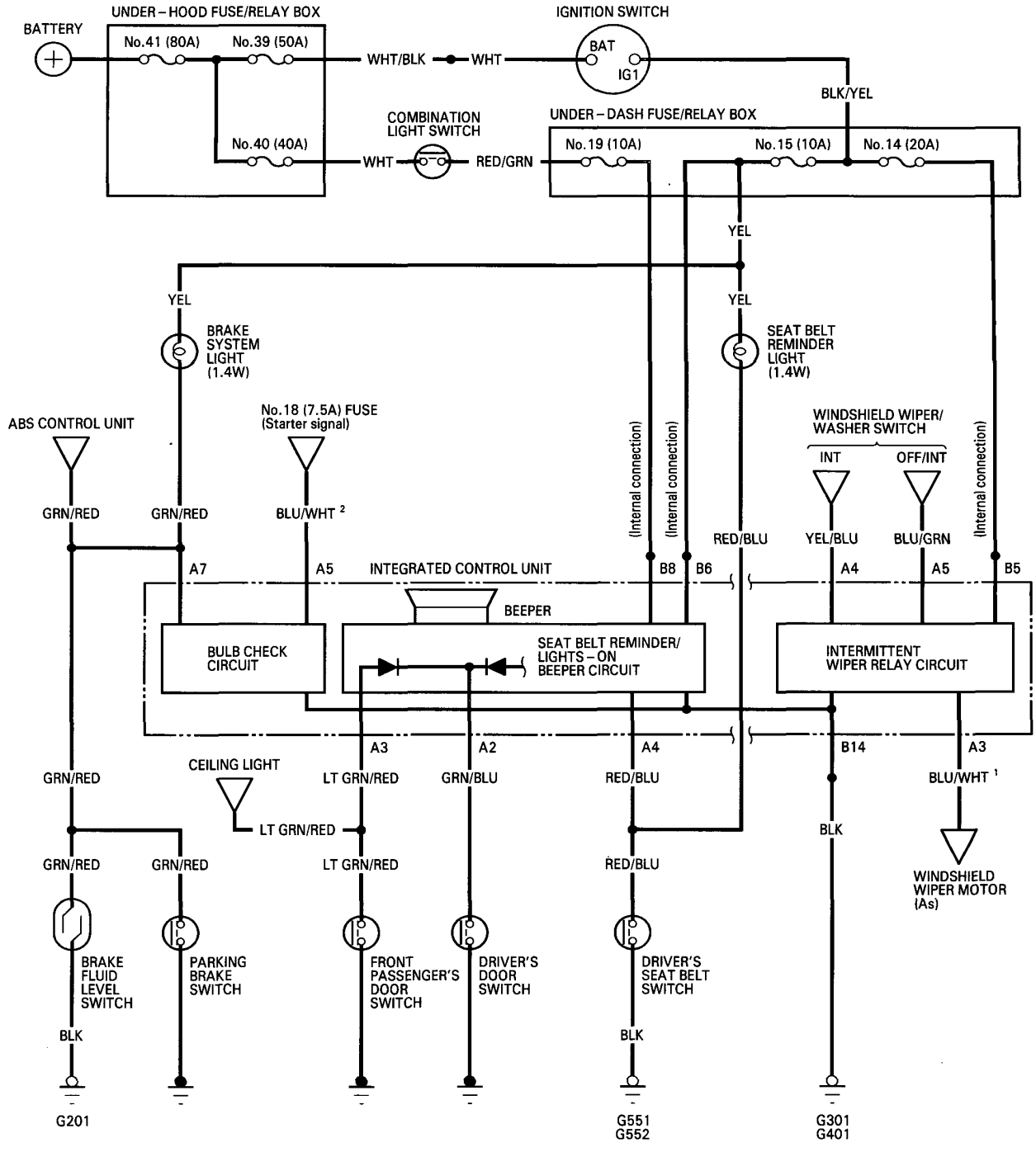
NOTE:
- Shift lever in neutral position.
- All electrical systems are turned OFF.

Integrated Control Unit (KQ model)

Circuit Diagram

Description

An integrated control unit, located behind the dashboard lower cover, integrates the functions of the bulb check circuit, seat belt reminder/light-on beeper circuit, and the intermittent wiper relay circuit onto one circuit board, sharing common circuit functions.



Input Test

CAUTION:

- **All SRS wire harnesses are covered with yellow insulation.**
- **Replace the entire affected SRS harness assembly if it has an open circuit or damaged wiring.**
- **Before disconnecting the SRS wire harness, turn the ignition switch OFF, disconnect the battery negative cable, then disconnect the positive cable, and wait at least three minutes.**

SRS Type III only:

- **Whenever the ignition switch is ON (II), or has been turned OFF for less than three minutes, be careful not to bump the SRS unit; the airbags could accidentally deploy and cause damage or injuries.**
- **Before you disconnect any part of an SRS wire harness, connect the short connectors (RED) to the airbags.**
- **Refer to additional precautions beginning on page 23-21 in the SRS sub-section.**

Remove the dashboard lower cover, then disconnect the 10-P connector from the integrated control unit. Next, remove the integrated control unit from the under-dash fuse/relay box. Inspect the connector and socket terminals to be sure they are all making good contact.

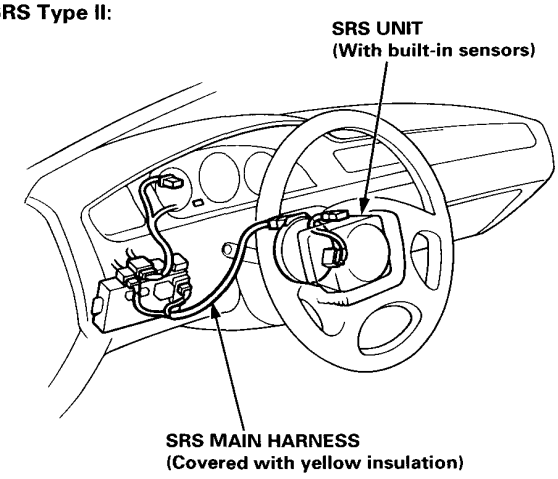
- If any terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
- If the terminals look OK, make the following input tests at the connector and socket terminals.

— If any test indicates a problem, find and correct the cause, then recheck the system.

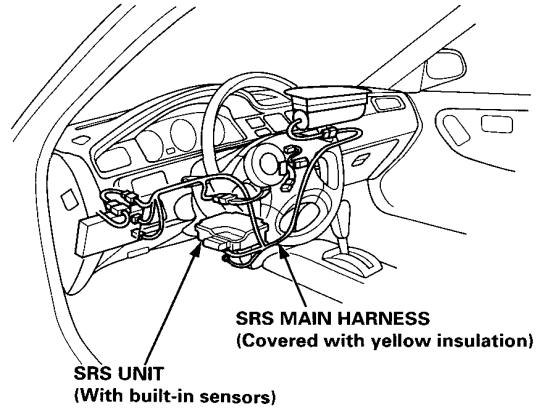
— If all the input tests prove OK, the control unit must be faulty; replace it.

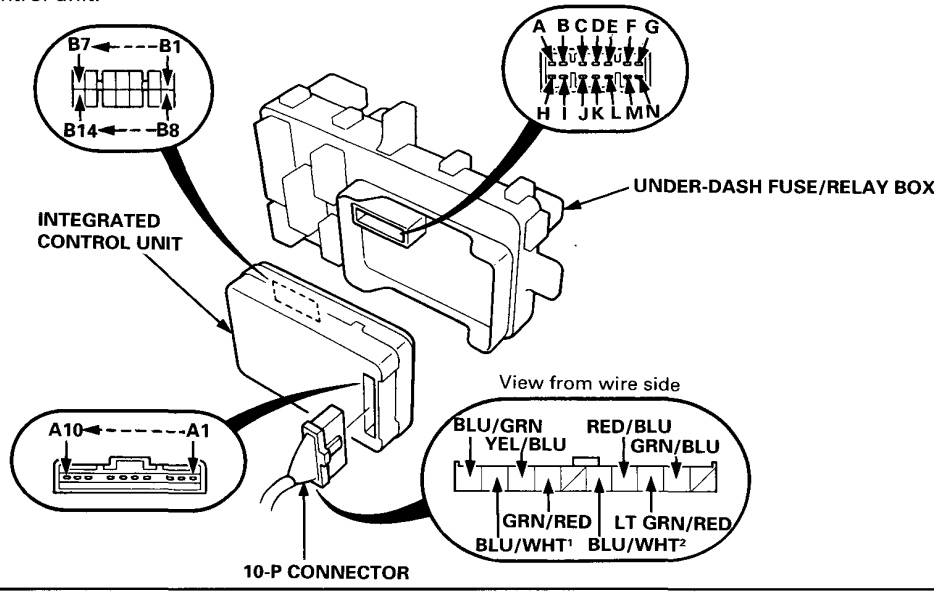
NOTE: Do not disconnect any other connectors from the under-dash fuse/relay box except those for the integrated control unit.

SRS Type II:



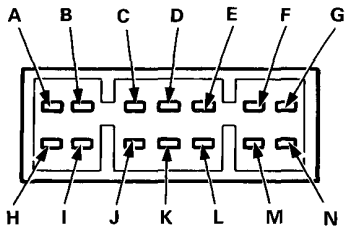
SRS Type III:

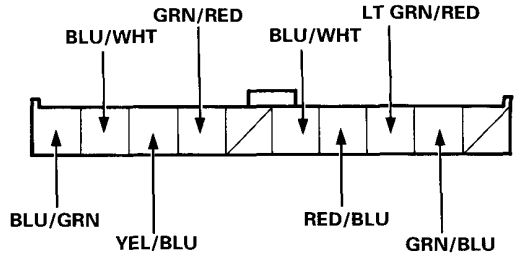




(cont'd)

Input Test (cont'd)





View from wire side

NOTE: Different wires with the same color have been given a number suffix to distinguish them (for example, BLU/WHT[1] and BLU/WHT[2] are not the same).

Bulb Check Circuit (brake system light):

No.	Terminal	Test condition	Test: Desired result	Possible cause if result is not obtained
1	N	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G301, G401) • An open in the wire
2	BLU/WHT[2]	Turn the ignition switch to START.	Check for voltage to ground: There should be battery voltage.	• Blown No. 18 (15 A) fuse in the under-dash fuse/relay box • Faulty neutral position switch (A/T) • An open in the wire
3	GRN/RED	Ignition switch ON (II), brake fluid reservoir full, and parking brake lever down	Connect to ground: The brake system light should come on.	• Blown No. 15 (10 A) fuse in the under-dash fuse/relay box • Blown brake system light • An open in the wire

Seat Belt Reminder/Lights-on Beeper Circuit:

No.	Terminal	Test condition	Test: Desired result	Possible cause if result is not obtained
1	N	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G301, G401) • An open in the wire
2	H	Headlight switch ON	Check for voltage to ground: There should be battery voltage.	• Blown No. 19 (10 A) fuse in the under-dash fuse/relay box • An open in the wire
3	F	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 15 (10 A) fuse in the under-dash fuse/relay box • An open in the wire
4	GRN/BLU	Driver's door open	Check for voltage to ground: There should be 1 V or less.	• Faulty driver's door switch • An open in the wire
5	LT GRN/RED	Front passenger's door open	Check for voltage to ground: There should be 1 V or less.	• Faulty front passenger's door switch • An open in the wire
6	RED/BLU	Driver's seat belt is not buckled.	Check for voltage to ground: There should be battery voltage.	• Poor ground (G551, G552) • Faulty Driver's seat belt switch • An open in the wire

Intermittent Wiper Relay Circuit:

No.	Terminal	Test condition	Test: Desired result	Possible cause if result is not obtained
1	N	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G301, G401) • An open in the wire
2	E	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 14 (20 A) fuse in the under-dash fuse/relay box • Faulty windshield washer switch • An open in the wire
3	YEL/BLU	Ignition switch ON (II), and windshield wiper switch to INT	Check for voltage to ground: There should be battery voltage.	• Blown No. 14 (20 A) fuse in the under-dash fuse/relay box • Faulty windshield wiper switch • An open in the wire
4	BLU/WHT[1] and BLU/GRN	Windshield wiper switch to OFF or INT, and wiper blades in rest position	Check for continuity between the BLU/WHT[1] and BLU/GRN terminals: There should be continuity.	• Faulty windshield wiper switch • Faulty windshield wiper motor • An open in the wire

Rear Window Defogger (KB model)

Component Location Index

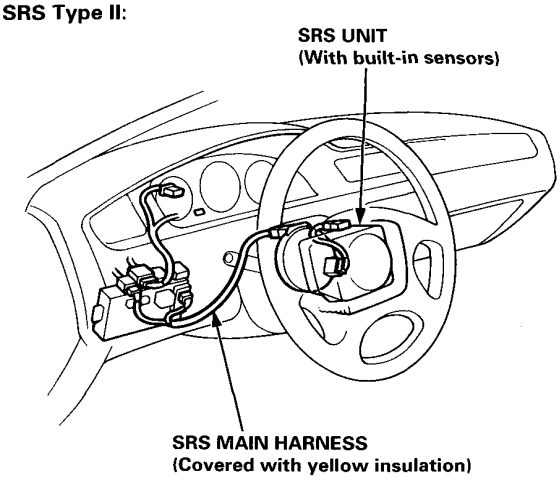
CAUTION:

- All SRS wire harnesses are covered with yellow insulation.
- Replace the entire affected SRS harness assembly if it has an open circuit or damaged wiring.
- Before disconnecting the SRS wire harness, turn the ignition switch OFF, disconnect the battery negative cable, then disconnect the positive cable, and wait at least three minutes.

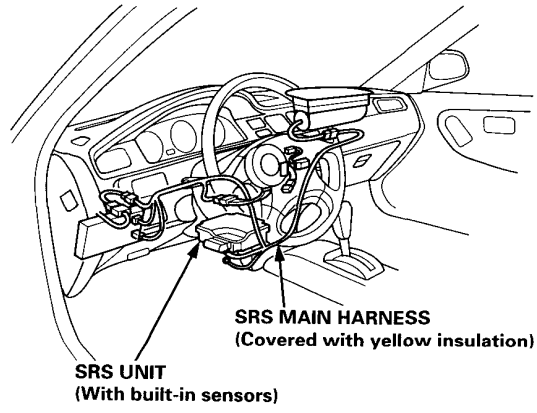
SRS Type III only:

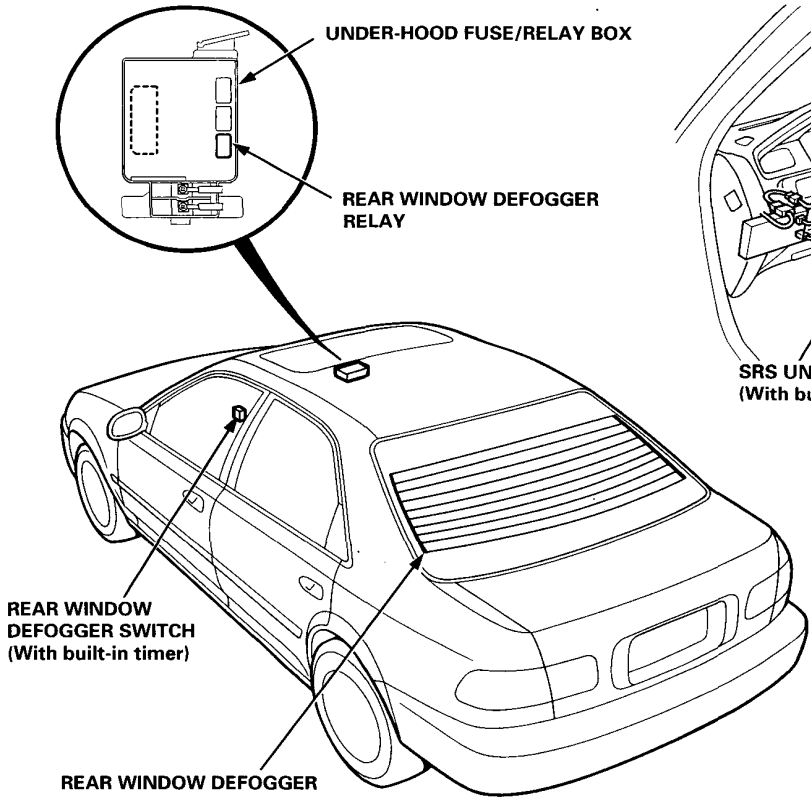
- Whenever the ignition switch is ON (II), or has been turned OFF for less than three minutes, be careful not to bump the SRS unit; the airbags could accidentally deploy and cause damage or injuries.
- Before you disconnect any part of an SRS wire harness, connect the short connectors (RED) to the airbags.
- Refer to additional precautions beginning on page 23-21 in the SRS sub-section.

SRS Type II:



SRS Type III:

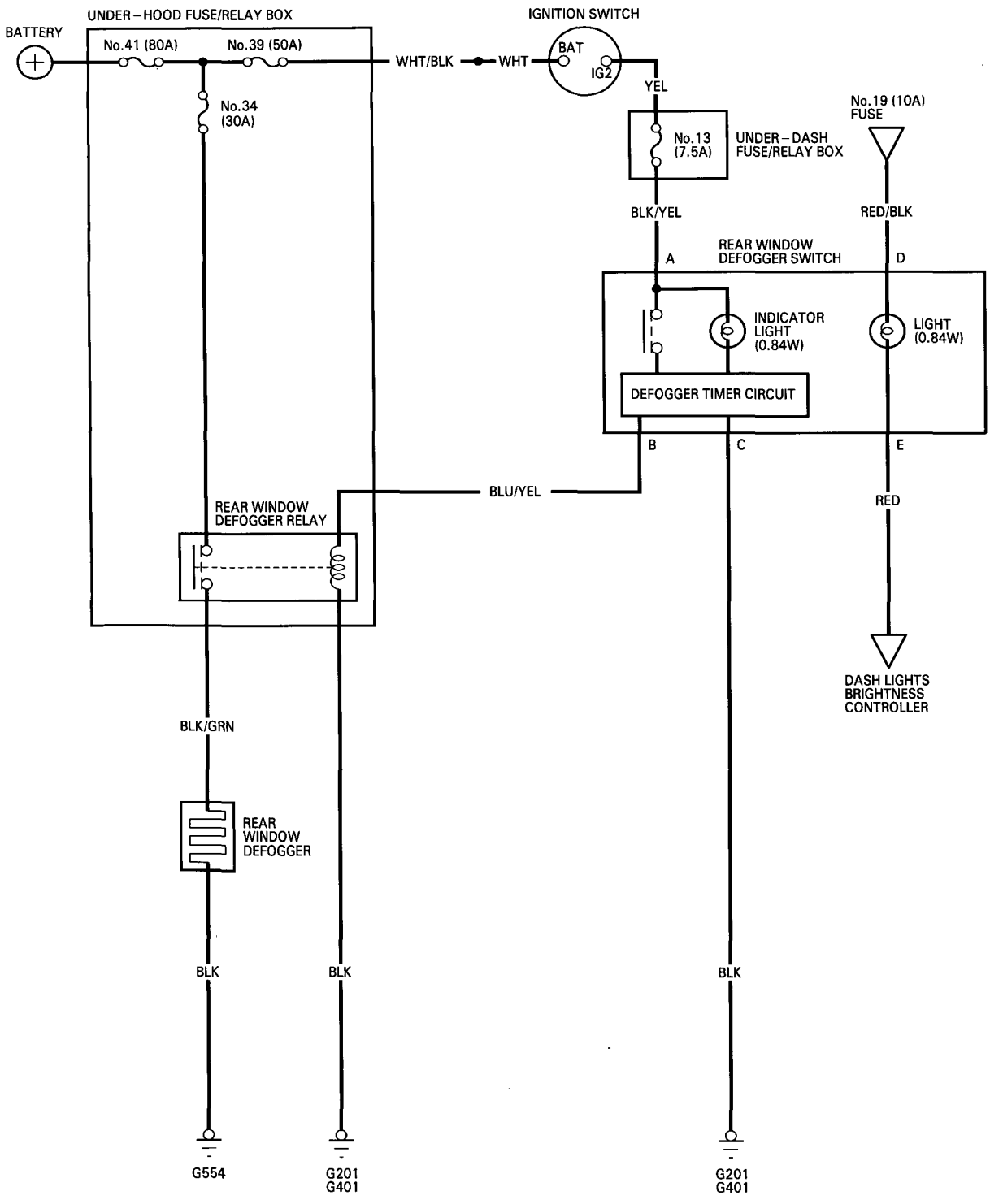



UNDER-HOOD FUSE/RELAY BOX
REAR WINDOW DEFOGGER RELAY
REAR WINDOW DEFOGGER SWITCH (With built-in timer)
REAR WINDOW DEFOGGER

Description

The rear window defogger timer circuit is built into the rear window defogger switch. When the defogger switch is turned ON, it sends a signal to the rear window defogger timer circuit, and the defogger stays on for about 25 minutes, or until the ignition switch is turned off. The indicator light in the switch comes on when the defogger is ON.

Circuit Diagram



Rear Window Defogger (KB model)

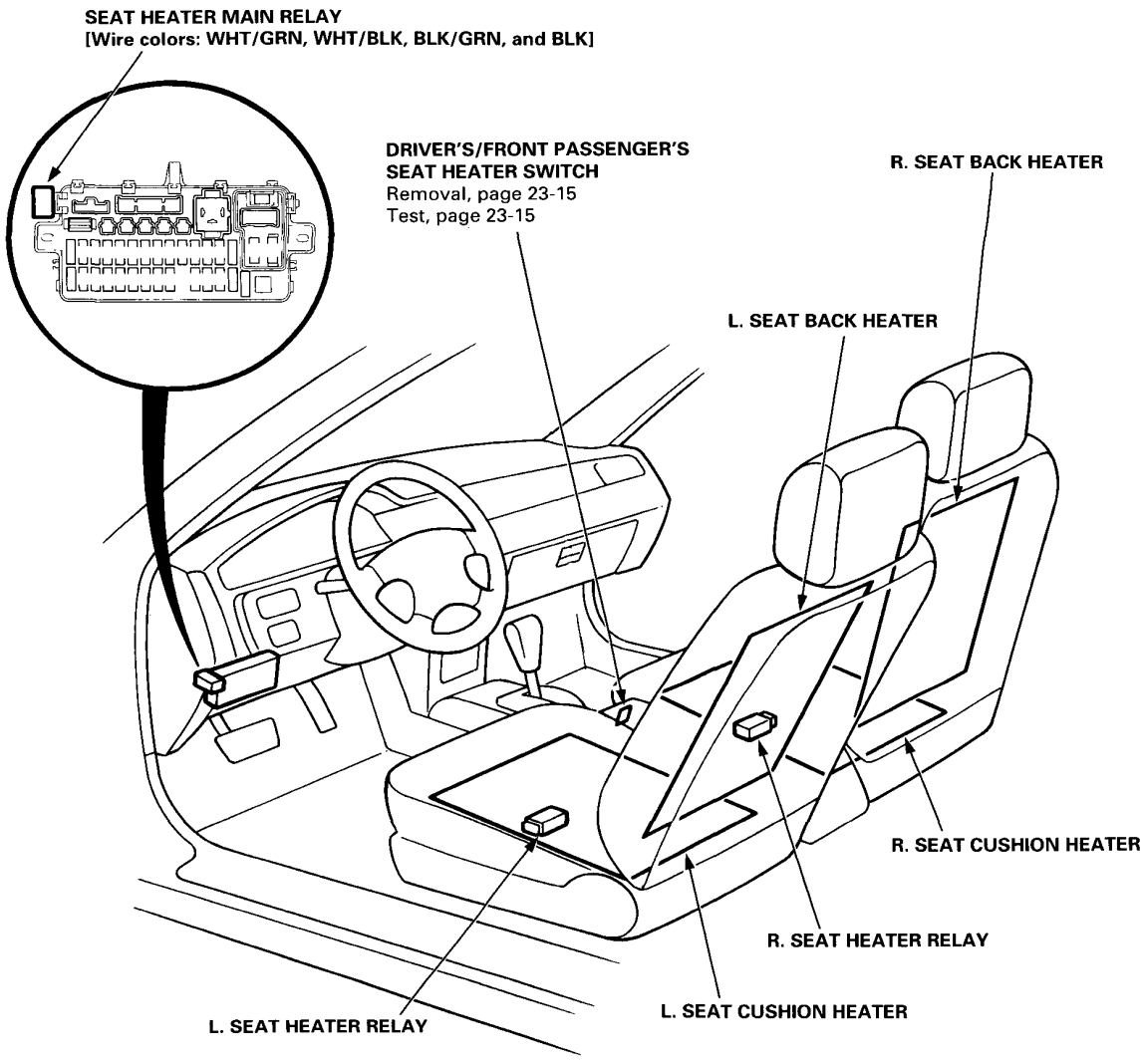
Troubleshooting

NOTE: The numbers in the table show the troubleshooting sequence.

Item to be inspected / Symptom	Blown indicator light bulb	Blown No. 13 (7.5 A) fuse (In the under-dash fuse/relay box)	Defogger timer circuit input (In the rear window defogger switch)	Blown No. 34 (30 A)fuse (In the under-hood fuse/relay box)	Function test	Defogger relay	Defogger switch	Poor ground	Open circuit, loose or disconnected terminals
Defogger works, but indicator light does not go on.	1						2		BLK/YEL
Defogger does not work and indicator light does not go on.		1	3				2	G201 G401	YEL, BLU/YEL or BLK/YEL
Defogger does not work, but indicator light goes on.				1	4	2	3	G554	BLU/YEL, BLK/YEL or BLK/GRN
Defogger-on time is too long or too short (normal operation time is 25 minutes).			1				2		

Seat Heaters (KS model with Headlight Adjuster)

Component Location Index

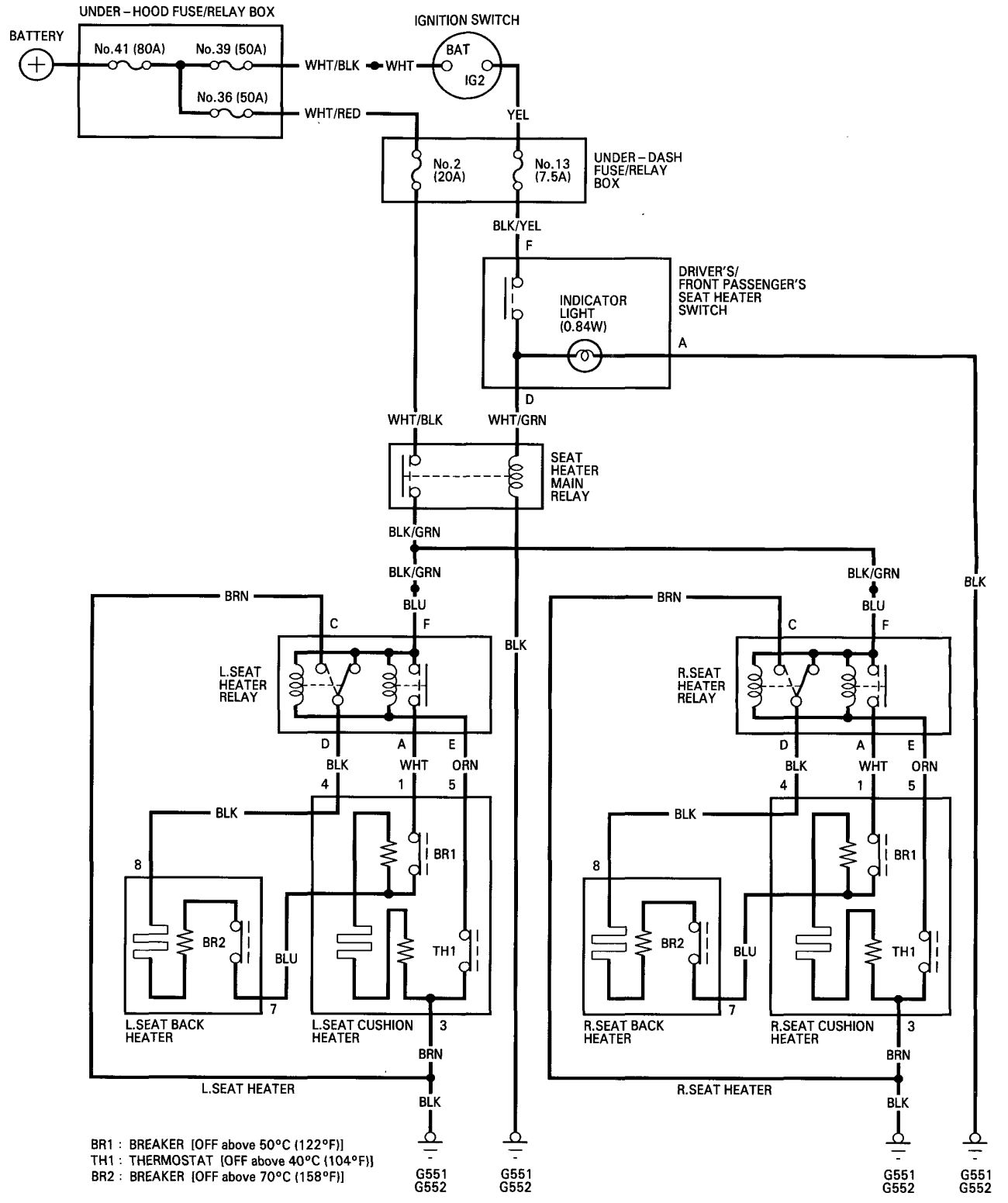

SEAT HEATER MAIN RELAY
[Wire colors: WHT/GRN, WHT/BLK, BLK/GRN, and BLK]
DRIVER'S/FRONT PASSENGER'S SEAT HEATER SWITCH
Removal, page 23-15
Test, page 23-15
R. SEAT BACK HEATER
L. SEAT BACK HEATER
R. SEAT CUSHION HEATER
R. SEAT HEATER RELAY
L. SEAT CUSHION HEATER
L. SEAT HEATER RELAY

Description

Two heaters are provided in each front seat; one in the seat cushion and one in the seat back. During normal use, temperature is automatically controlled by the thermostat (OFF above 40°C [104°F] built into each seat cushion heater. In case of an emergency, the breaker 1 (OFF above 50°C [122°F]) and the breaker 2 (OFF above 70°C [158°F]) open the circuit to prevent abnormal temperature rise.

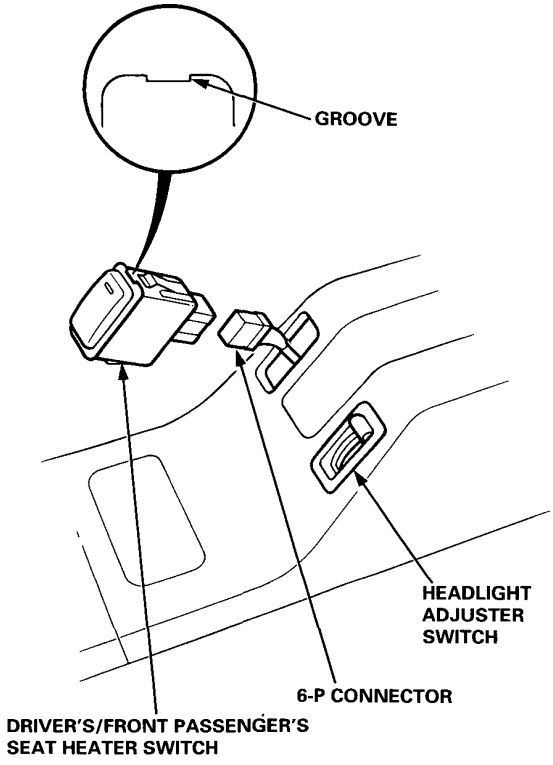
Seat Heaters (KS model with Headlight Adjuster)

Circuit Diagram



Switch Removal

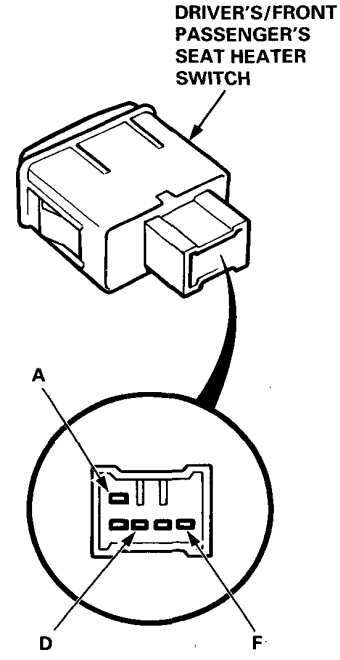
1. Pry the switch out of the console.
2. Disconnect the 6-P connector to remove the switch.

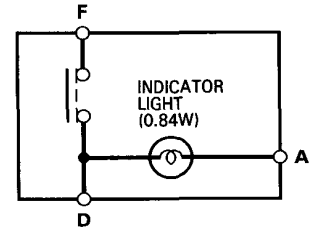


Switch Test

1. Pry the seat heater switch out of the console.
2. Check for continuity between the terminals according to the table.

Terminal / Position	A		D	F
ON	○	○	○	○
OFF	○	○	○	





Supplemental Restraint System (SRS) — Type III (KB model)

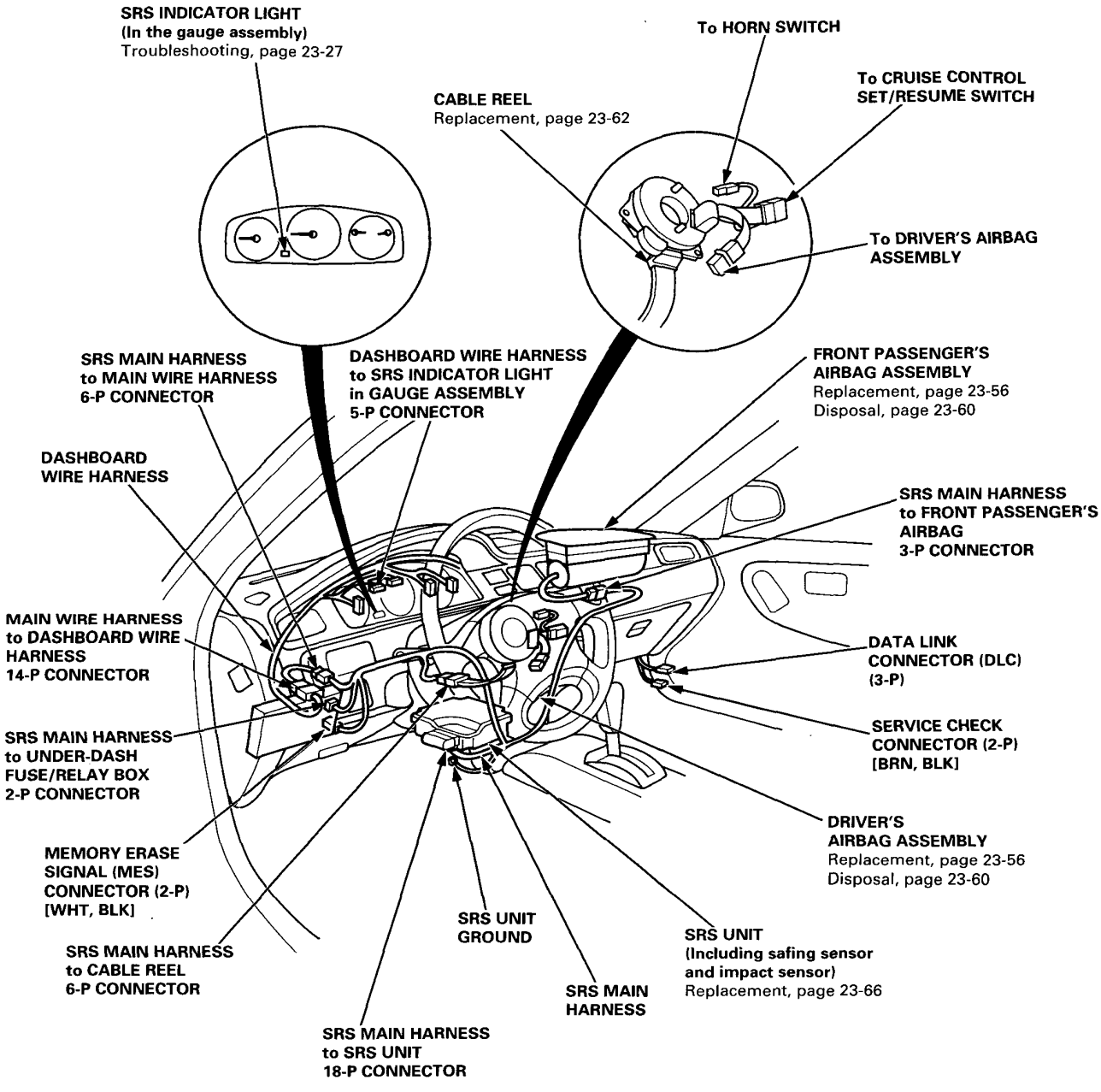
Component/Wiring Location Index 23-18
Description 23-19
Circuit Diagram 23-20
Precautions/Procedures
- General Precautions 23-21
- Airbag Handling and Storage 23-21
- SRS Unit Precautions 23-22
- Inspection After Deployment 23-22
- Wiring Precautions 23-23
- Steering-related Precautions 23-24
- Connecting the Short Connectors ... 23-25

Troubleshooting
- Self-diagnostic Procedures 23-26
- Diagnostic Trouble Code (DTC) Chart 23-29
- SRS Indicator Light Wire Connections 23-30
- Flowcharts 23-31

Airbag Assembly
- Replacement 23-56
- Disposal 23-60

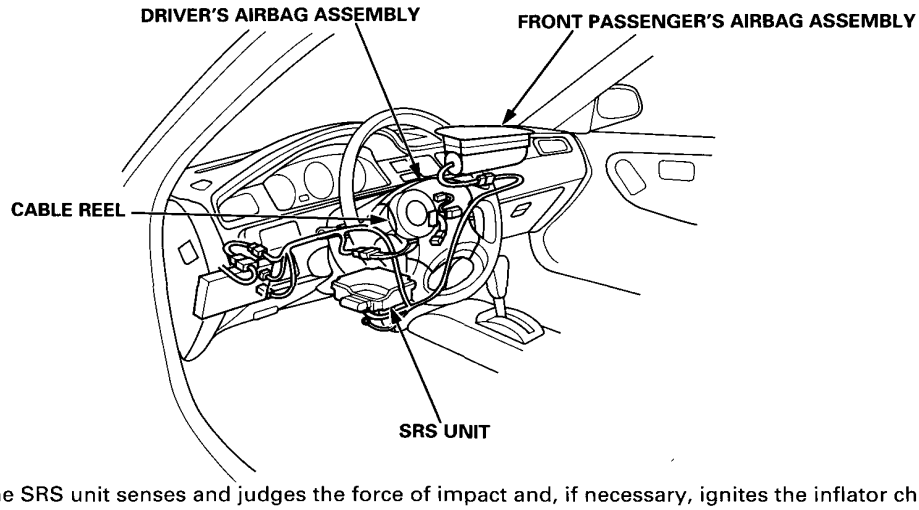
Cable Reel
- Replacement 23-62

SRS Unit
- Replacement 23-66


SRS INDICATOR LIGHT
(In the gauge assembly)
Troubleshooting, page 23-27
To HORN SWITCH
To CRUISE CONTROL
SET/RESUME SWITCH
CABLE REEL
Replacement, page 23-62
To DRIVER'S AIRBAG
ASSEMBLY
SRS MAIN HARNESS
to MAIN WIRE HARNESS
6-P CONNECTOR
DASHBOARD WIRE HARNESS
to SRS INDICATOR LIGHT
in GAUGE ASSEMBLY
5-P CONNECTOR
FRONT PASSENGER'S
AIRBAG ASSEMBLY
Replacement, page 23-56
Disposal, page 23-60
DASHBOARD
WIRE HARNESS
SRS MAIN HARNESS
to FRONT PASSENGER'S
AIRBAG
3-P CONNECTOR
MAIN WIRE HARNESS
to DASHBOARD WIRE
HARNESS
14-P CONNECTOR
DATA LINK
CONNECTOR (DLC)
(3-P)
SRS MAIN HARNESS
to UNDER-DASH
FUSE/RELAY BOX
2-P CONNECTOR
SERVICE CHECK
CONNECTOR (2-P)
[BRN, BLK]
DRIVER'S
AIRBAG ASSEMBLY
Replacement, page 23-56
Disposal, page 23-60
MEMORY ERASE
SIGNAL (MES)
CONNECTOR (2-P)
[WHT, BLK]
SRS UNIT
GROUND
SRS UNIT
(Including safing sensor
and impact sensor)
Replacement, page 23-66
SRS MAIN HARNESS
to CABLE REEL
6-P CONNECTOR
SRS MAIN
HARNESS
SRS MAIN HARNESS
to SRS UNIT
18-P CONNECTOR

Description

The SRS is a safety device which, when used in conjunction with the seat belt, is designed to help protect the driver and front passenger in a frontal impact exceeding a certain set limit. The system consists of the SRS unit (including safing sensor and impact sensor), the cable reel and driver's airbag, and front passenger's airbag.

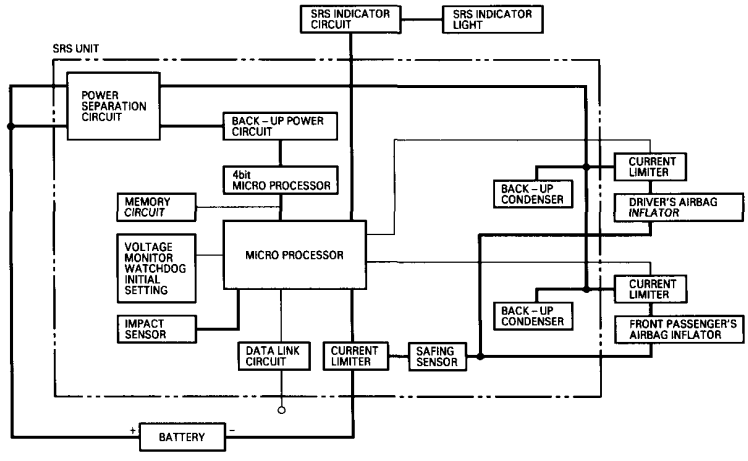


Operation

The main circuit in the SRS unit senses and judges the force of impact and, if necessary, ignites the inflator charges. If battery voltage is too low or power is disconnected due to the impact, the back-up power circuit will keep voltage at a constant level.

For the SRS to operate:

(1) The impact sensor and safing sensor must activate, and send electric signals to the micro processor.
(2) The micro processor must compute the signals, and must send signals to the airbag inflators.
(3) The inflators must ignite and deploy the airbags.

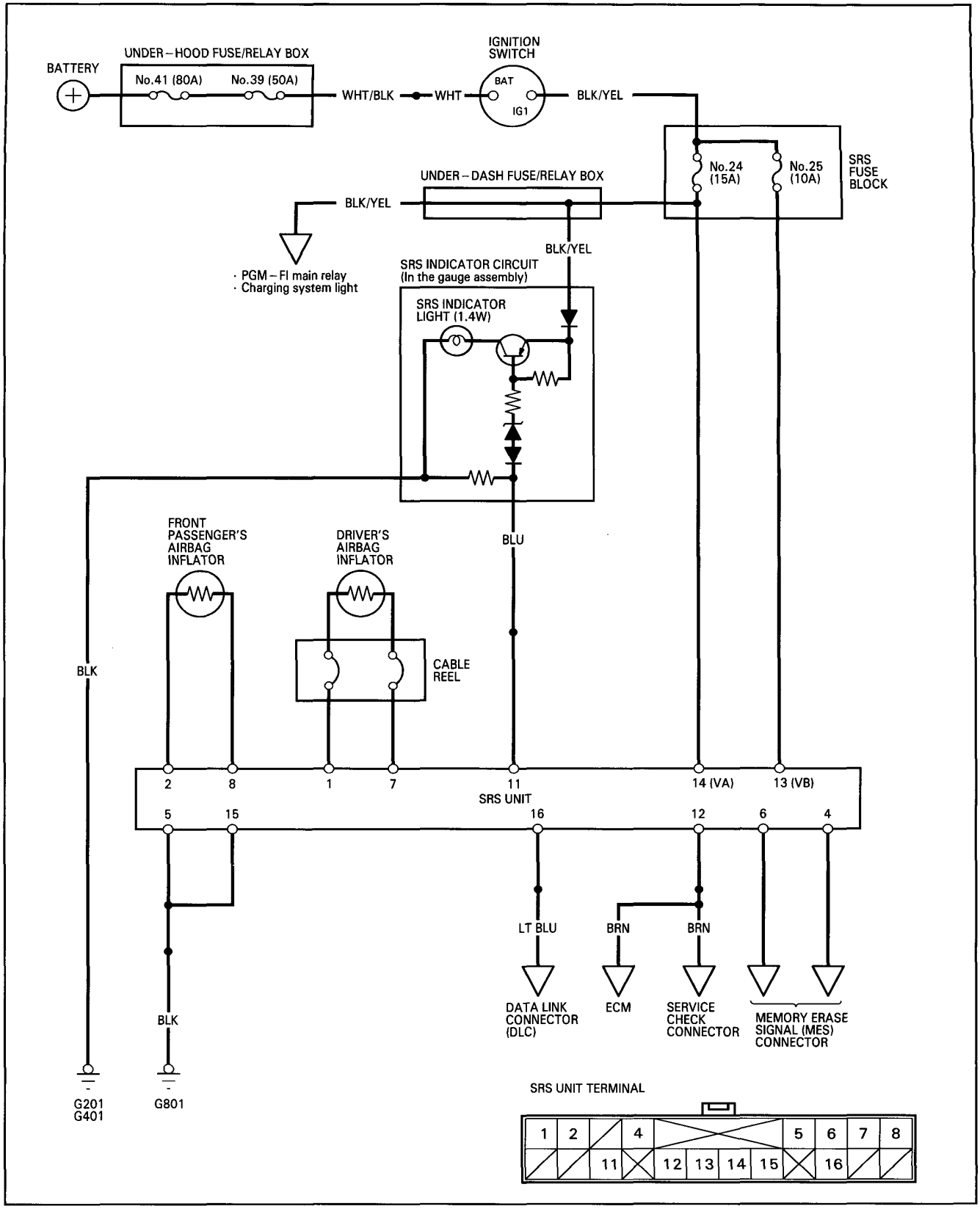


Self-diagnosis System

A self-diagnosis circuit is built into the SRS unit; when the ignition switch is turned ON (II), the SRS indicator light comes on and goes off after about six seconds if the system is operating normally. If the light does not come on, or does not go off after six seconds, or if it comes on while driving, it indicates an abnormality in the system. The system must be inspected and repaired as soon as possible.

For better serviceability, the memory will store the cause of the malfunction, and the data link circuit passes on the information from the memory to the data link connector.

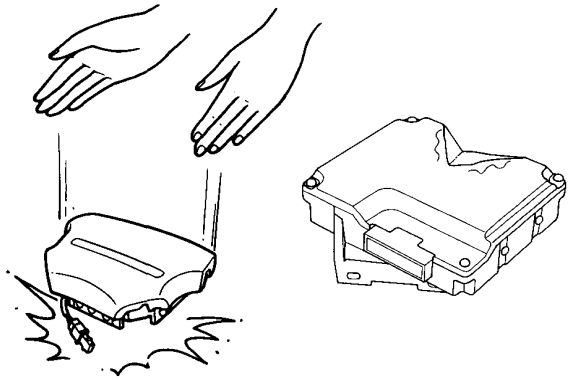
Circuit Diagram



General Precautions

- Carefully inspect any SRS part before you install it. Do not install any part that shows signs of being dropped or improperly handled, such as dents, cracks or deformation:

  — Airbag assemblies
  — Cable reel
  — SRS unit



- Use only a digital multimeter to check the system. If it's not a Honda multimeter, make sure its output is 10 mA (0.01 A) or less when switched to the smallest value in the ohmmeter range. A tester with a higher output could damage the airbag circuit or cause accidental deployment and possible injury.

- Do not install used SRS parts from another car. When making SRS repairs, use only new parts.

- Except when performing electrical inspections, always disconnect both the negative cable and positive cable from the battery, and wait at least three minutes before beginning work.

- Replacement of the combination light and wiper/washer switches and cruise control switch can be done without removing the steering wheel:

  — Combination light and wiper/washer switch replacement.
  — Cruise control set/resume switch replacement.

- Whenever the ignition switch is ON (II), or has been turned OFF for less than three minutes, be careful not to bump the SRS unit; the airbags could accidentally deploy and cause damage or injuries.

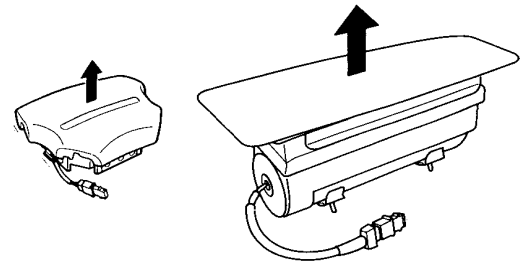
- Whenever the airbag has been activated, replace the SRS unit.

Airbag Handling and Storage

Do not try to disassemble the airbag assembly. It has no serviceable parts. Once an airbag has been operated (deployed), it cannot be repaired or reused.

For temporary storage of the airbag assembly during service, please observe the following precautions:

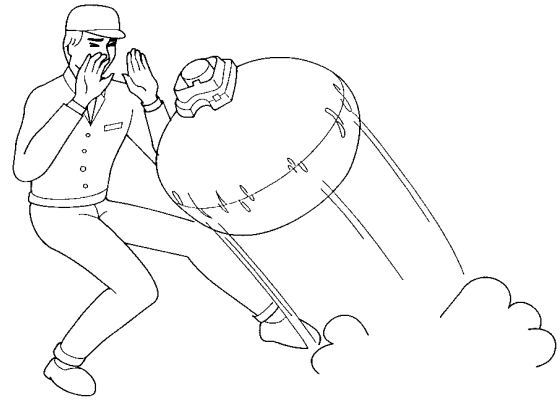
- Store the removed airbag assembly with the pad surface up.



⚠ WARNING If the airbag is improperly stored face down, accidental deployment could propel the unit with enough force to cause serious injury.

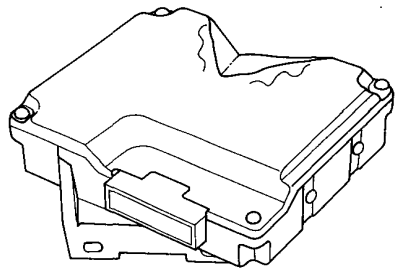
- Store the removed airbag assembly on a secure flat surface away from any high heat source (exceeding 100°C/212°F) and free of any oil, grease, detergent or water.

CAUTION: Improper handling or storage can internally damage the airbag assembly, making it inoperative. If you suspect the airbag assembly has been damaged, install a new unit and refer to the Deployment/Disposal Procedures for disposing of the damaged airbag.

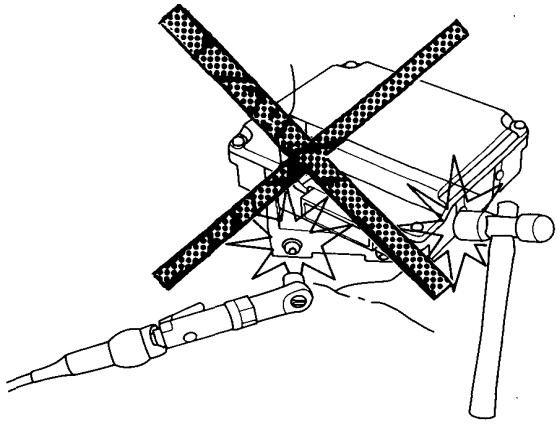


SRS Unit Precautions

- Take extra care when painting or doing body work in the area below the dashboard. Avoid direct exposure of the SRS unit or wiring to heat guns, welding, or spraying equipment.
- Connect the short connectors before working below the dashboard near the SRS unit.
- After any degree of frontal body damage, or after a collision without airbag deployment, inspect the SRS unit for physical damage. If it is dented, cracked, or deformed, replace it.



- Be sure the SRS unit is installed securely.
- Do not disassemble the SRS unit.
- Store the SRS unit in a cool and dry place. Do not spill water or oil on the SRS unit, and keep it from dust.
- During installation or replacement, be careful not to bump (impact wrench, hammer, etc.) the area around the SRS unit. The airbags could accidentally deploy and cause damage or injuries.



Inspection After Deployment

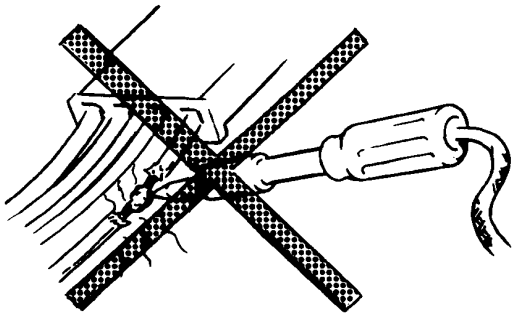
After a collision in which the airbags were deployed, replace the SRS unit and inspect the following:

1. Inspect all the SRS wire harnesses. Replace, don't repair, any damaged harnesses.
2. Inspect the cable reel for heat damage. If there is any damage, replace the cable reel.
3. After the car is completely repaired, turn the ignition switch on. If the SRS indicator light comes on for about six seconds and then goes off, the SRS system is OK. If the indicator light does not function properly, go to SRS Troubleshooting.

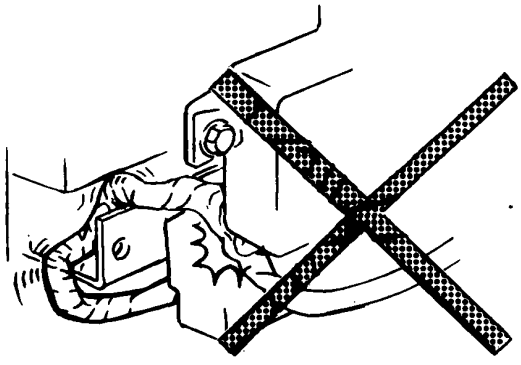
Wiring Precautions

- Never attempt to modify, splice or repair SRS wiring.

  NOTE: SRS wiring can be identified by special yellow outer protective covering.



- Be sure to install the harness wires so that they are not pinched or interfering with other car parts.

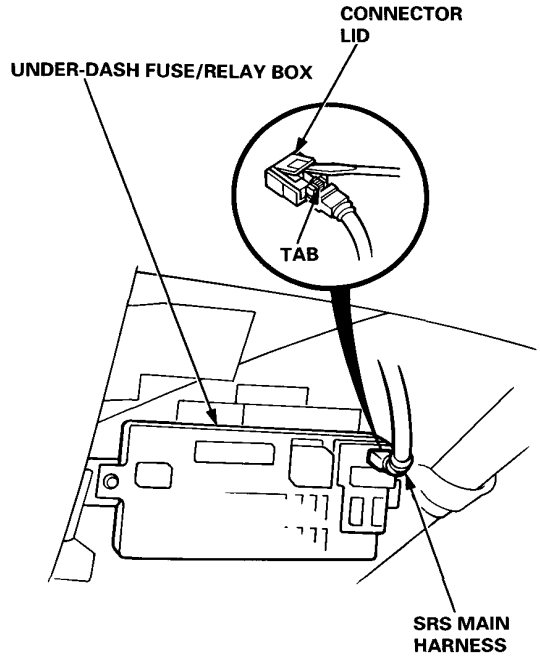


- Make sure all SRS ground locations are clean and grounds are securely fastened for optimum metal-to-metal contact. Poor grounding can cause intermittent problems that are difficult to diagnose.

Disconnecting the SRS Connector at the Under-dash Fuse/Relay Box:

CAUTION: Avoid breaking the connector; it's double-locked.

1. First lift the connector lid with a thin screwdriver, then press the connector tab down and pull the connector out.

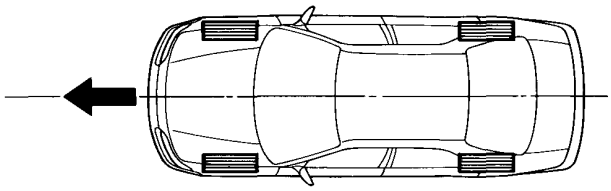


2. To reinstall the connector, push it into position until it clicks, then close its lid.

Steering-related Precautions

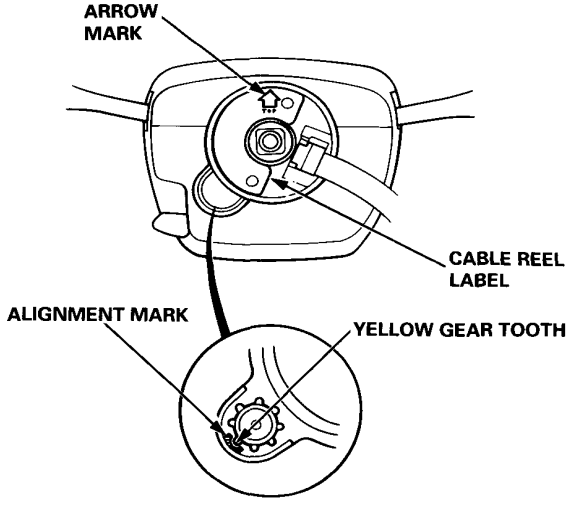
Steering Wheel and Cable Reel Alignment

NOTE: To avoid misalignment of the steering wheel or airbag on reassembly, make sure the wheels are turned straight ahead before removing the steering wheel.



Rotate the cable reel clockwise unit it stops.
Then rotate it counterclockwise (approximately two turns) until

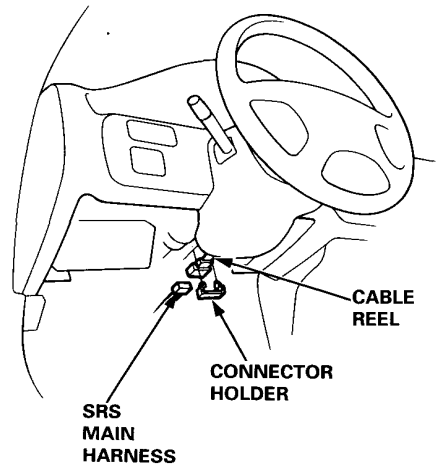
— the yellow gear tooth lines up with the alignment mark on the cover.
— the arrow mark on the cable reel label points straight up.



Steering Column Removal

CAUTION:

- **Before removing the steering column, first disconnect the connector between the cable reel and the SRS main harness.**
- **If the steering column is going to be removed without dismounting the steering wheel, lock the steering by turning the ignition key to 0-LOCK position, or remove the key from the ignition so that the steering wheel will not turn.**



Do not replace the original steering wheel with any other design, since it will make it impossible to properly install the airbag (only use genuine Honda replacement parts).

After reassembly, confirm that the wheels are still turned straight ahead and that the steering wheel spoke angle is correct. If minor spoke angle adjustment is necessary, do so only by adjustment of the tie-rods, not by removing and repositioning the steering wheel.

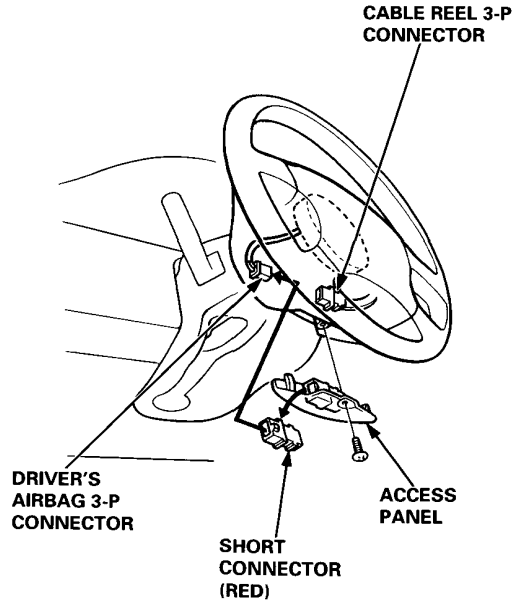
Connecting the Short Connectors

⚠ WARNING To avoid accidental deployment and possible injury, always connect the protective short connectors on the driver's and passenger's airbag connectors before working near any SRS wiring.

1. Disconnect the battery negative cable, then disconnect the positive cable, and wait at least three minutes.
2. Connect the short connectors (RED):

Driver's Side:

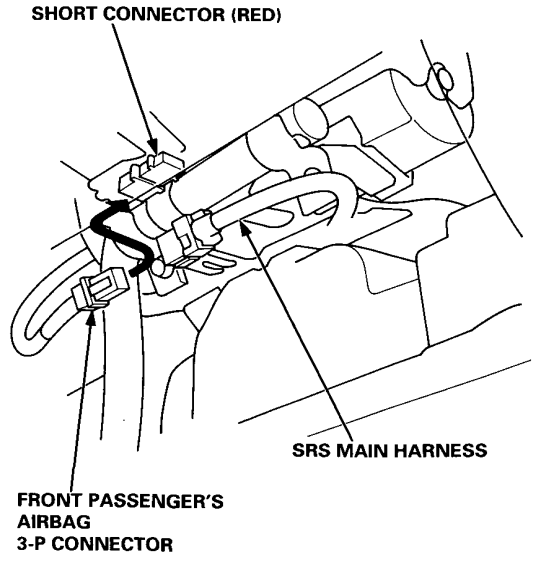
- Remove the access panel from the steering wheel, then remove the short connector (RED) from the panel.



- Disconnect the 3-P connector between the driver's airbag and cable reel, then connect the short connector (RED) to the airbag side of the connector.

Front Passenger's Side:

- Remove the glove box and access panel.
- Disconnect the 3-P connector between the front passenger's airbag and SRS main harness, then connect the short connector (RED) to the airbag side of the connector.



Self-diagnostic Procedures

The self-diagnostic function of the SRS system allows it to locate the causes of system problems and to store this information in memory. For easier troubleshooting, this data can be retrieved via the data link circuit.

- When you turn the ignition switch ON (II), the SRS indicator will come on. If it goes off after six seconds, the system is normal.
- If there is an abnormality, the system locates and defines the problem, and stores this information in memory while the SRS indicator light turns on.
  NOTE: The data will remain in the memory even when the ignition switch is turned off, or if the battery is disconnected.
- When you connect the SCS short connector to the service check connector (2-P), and turn the ignition switch ON (II), the SRS indicator light will indicate the diagnostic trouble code (DTC) by the number of blinks.
- After reading and recording the DTC, proceed with the troubleshooting for this code.

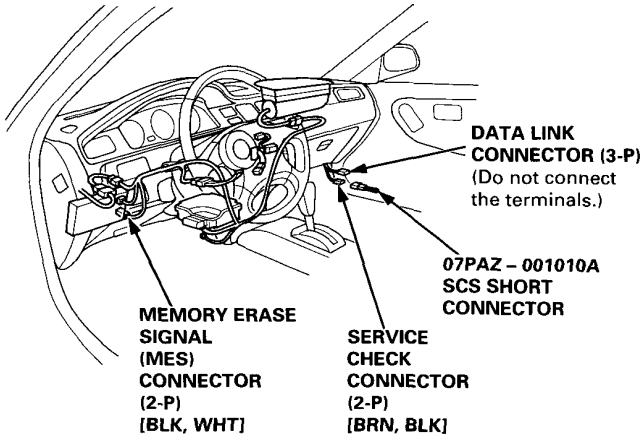
Precautions

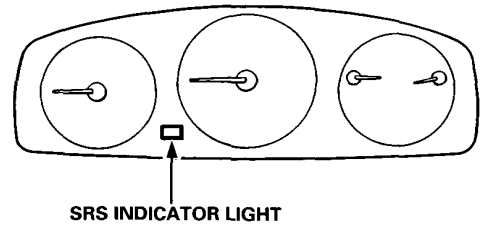
- Use only a digital multimeter to check the system. If it's not a Honda multimeter, make sure its output is 10 mA (0.01 A) or less when switched to the smallest value in the ohmmeter range. A tester with a higher output could damage the airbag circuit or cause accidental airbag deployment and possible injury.
- Whenever the ignition switch is ON (II), be careful not to bump the SRS unit; the airbags could accidentally deploy and cause damage or injuries.
- Before you remove the SRS main harness, connect the short connectors (RED) to the airbag connectors.
- Do not touch a tester probe to the terminals in the SRS unit or harness connectors, and do not connect the terminals with a jumper wire. Use only the test harness and the SCS short connectors.
- Make sure the battery is sufficiently charged. If the battery is dead or low, or the back-up power circuit in the SRS unit is faulty, measuring values won't be correct.

Diagnostic Trouble Code (DTC)

The SRS indicator light indicates the DTC by the number of blinks when the SCS short connector is connected to the service check connector.

1. With the ignition switch OFF, connect the SCS short connector to the service check connector.

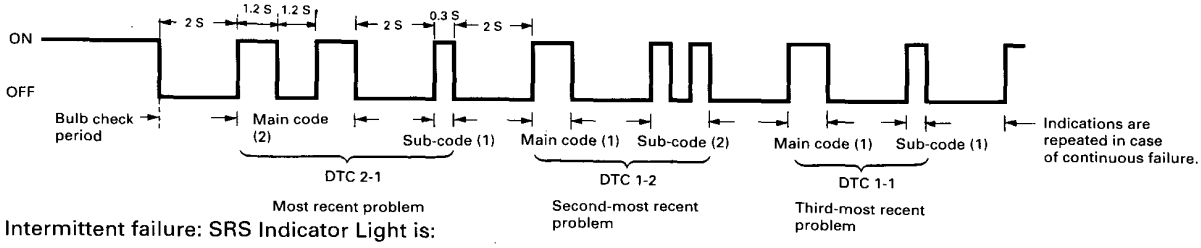

DATA LINK CONNECTOR (3-P) (Do not connect the terminals.)
07PAZ – 001010A SCS SHORT CONNECTOR
MEMORY ERASE SIGNAL (MES) CONNECTOR (2-P) [BLK, WHT]
SERVICE CHECK CONNECTOR (2-P) [BRN, BLK]



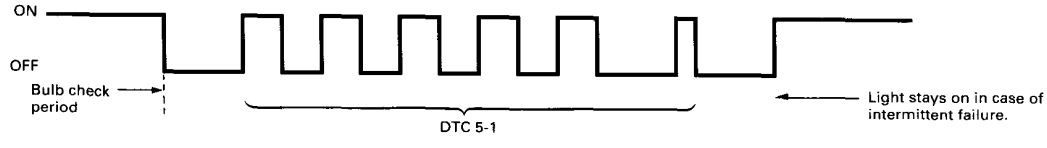
2. Turn the ignition switch ON (II). The SRS indicator light comes on for about six seconds and goes off. Then it will indicate the DTC:
   — The DTC consists of a main code and a sub-code.
   — Including the most recent problem, up to three different malfunctions can be indicated.
   — In case of a continuous failure, the DTC will be indicated repeatedly (see example 1. below).
   — In case of an intermittent failure, the SRS indicator light will indicate the DTC one time, then it will stay on (see example 2. below).
   — If both a continuous and an intermittent failure occur, both DTCs will be indicated as continuous failures.
   — In case the system is normal is (no DTC), the SRS indicator light will start blinking continuous short blinks (see example 3. below).

Example of DTC Indications:

1. Continuous failure: SRS Indicator Light is:



2. Intermittent failure: SRS Indicator Light is:



3. Normal (no failure): SRS Indicator Light is:

Troubleshooting of Intermittent Failures

If there was a malfunction, but it doesn't recur, it will be stored in the memory as an intermittent failure, and the SRS indicator light comes on.

After checking the DTC, troubleshoot as follows:

1. Record the DTC.
2. Remove the SCS short connector from the service check connector.
3. Erase the DTC memory (see "Erasing the DTC Memory").
4. With the shift lever in neutral, turn the ignition switch ON (II), and let the engine idle.
5. Connect the SCS short connector to the service check connector. The SRS indicator light will blink continuous short blinks.

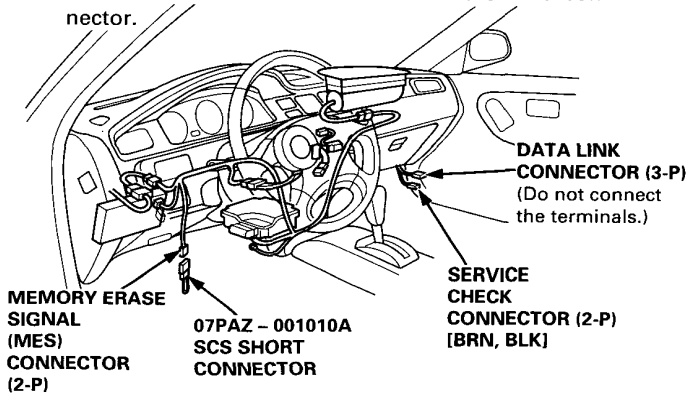
6. Shake the wire harness and the connector, and/or take a test drive (quick acceleration, quick braking, cornering) to find the cause of the intermittent failure. If the problem recurs, the SRS indicator light will stop blinking and stay on.

7. If you can't duplicate the intermittent failure, the system is OK at this time. Disconnect the SCS short connector.

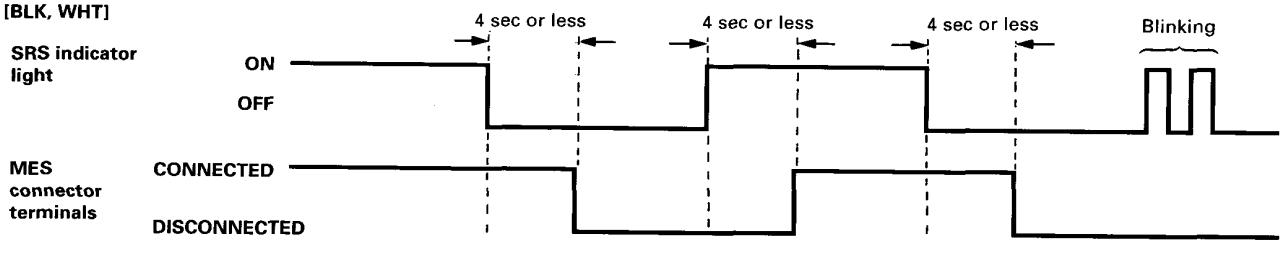
Erasing the DTC Memory

NOTE: Use only the SCS short connector. Otherwise, you may not erase the memory because it is akward to connect and disconnect a jumper wire quickly enough.

1. Turn the ignition switch OFF, and disconnect the SCS short connector from the service check connector.
2. Connect the SCS short connector to the MES connector.


DATA LINK CONNECTOR (3-P) (Do not connect the terminals.)
SERVICE CHECK CONNECTOR (2-P) [BRN, BLK]
MEMORY ERASE SIGNAL (MES) CONNECTOR (2-P) [BLK, WHT]
07PAZ – 001010A SCS SHORT CONNECTOR

3. Turn the ignition switch ON (II).
4. The SRS indicator light comes on for about six seconds and goes off. Remove the SCS short connector from the MES connector within four seconds after the SRS indicator light went off.
5. The SRS indicator light comes on again. Reconnect the SCS short connector to the MES connector within four seconds after the SRS indicator comes on.
6. The SRS indicator light goes off. Remove the SCS short connector from the MES connector within four seconds.
7. The SRS indicator light indicates that the memory is erased by blinking two times.



Diagnostic Trouble Code (DTC) Chart

NEC:

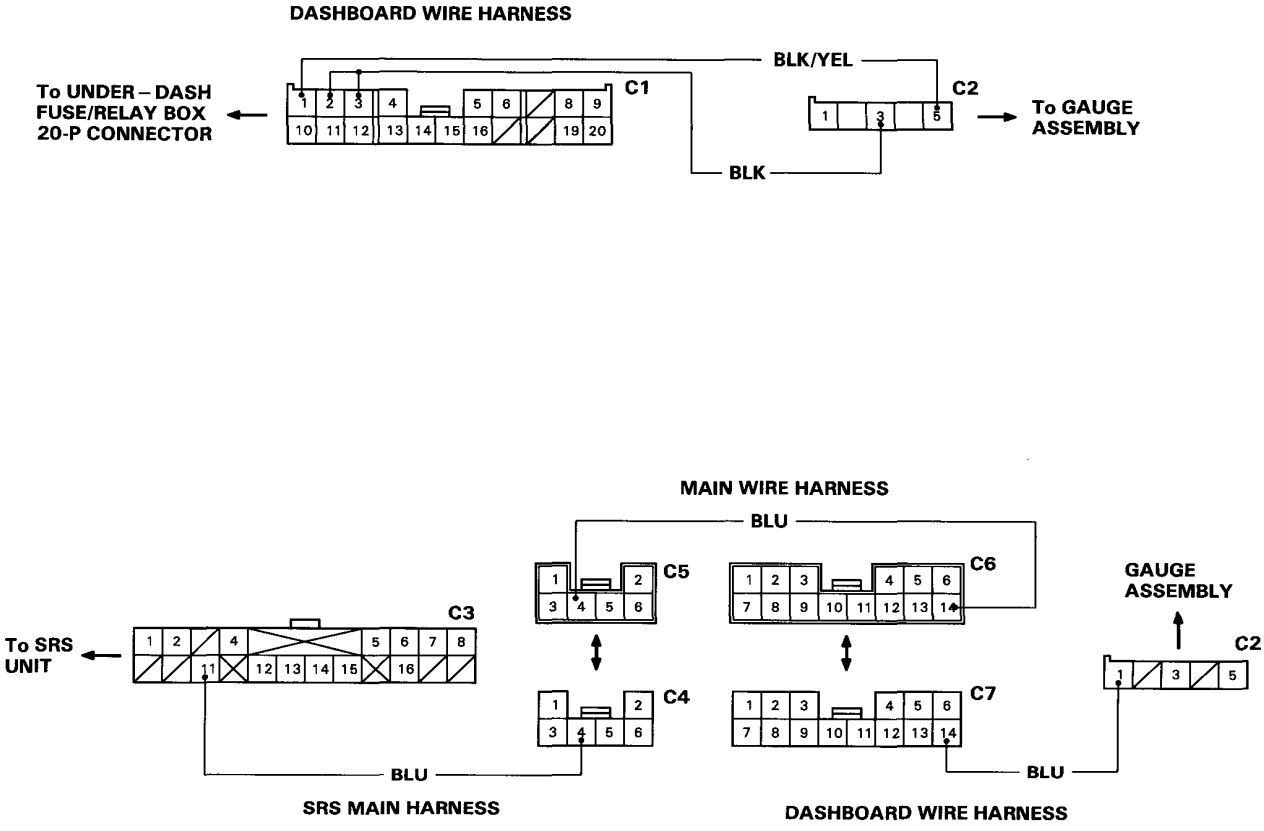
SRS indicator light	DTC	Possible cause	Corrective action	See page
doesn't come on	none	Faulty SRS indicator light circuit	Troubleshooting	23-31
comes on	1-1	Open in the driver's airbag inflator or increased resistance	Troubleshooting	23-34
	1-2	Short to another wire in the driver's airbag inflator or decreased resistance		23-36
	1-3	Short to power in the driver's airbag inflator		23-38
	1-4	Short to ground in the driver's airbag inflator		23-40
	2-1	Open in the passenger's airbag inflator or increased resistance	Troubleshooting	23-43
	2-2	Short to another wire in the passenger's airbag inflator or decreased resistance		23-45
	2-3	Short to power in the passenger's airbag inflator		23-47
	2-4	Short to ground in the passenger's airbag inflator		23-48
	5-1	Internal failure of the SRS unit	Troubleshooting or SRS unit replacement	23-66
	10-1	SRS unit replacement code (SRS unit must not be used any longer)	SRS unit replacement	
	9-1 none	Faulty SRS indicator light circuit	Troubleshooting	23-50
	9-2	Faulty SRS power supply system		23-54

NOTE:

- If multiple DTCs including DTC 5-1 are indicated, first troubleshoot all DTCs except DTC 5-1, then erase the memory, and recheck the DTC indication. If DTC 5-1 doesn't reappear, it is not necessary to replace the SRS unit.
- When you return the SRS unit in case of a warranty claim, do not erase the memory. The data will remain in the memory even when the ignition switch is turned off.
- If an intermittent failure occurs, DTC 9-1 will be indicated. In case of a continuous problem, there will be no DTC.

SRS Indicator Light Wire Connections

SRS Indicator Light Power Circuit



C1: DASHBOARD WIRE HARNESS 20-P CONNECTOR
C2: DASHBOARD WIRE HARNESS 5-P CONNECTOR
C3: SRS MAIN HARNESS 18-P CONNECTOR
C4: SRS MAIN HARNESS 6-P CONNECTOR
C5: MAIN WIRE HARNESS 6-P CONNECTOR
C6: MAIN WIRE HARNESS 14-P CONNECTOR
C7: DASHBOARD WIRE HARNESS 14-P CONNECTOR

The SRS Indicator Light Doesn't Come On

CAUTION: Whenever the ignition switch is ON (II), or has been turned OFF for less than three minutes, be careful not to bump the SRS unit; the airbags could accidentally deploy and cause damage or injuries.

Check the power supply (fuse):
Turn the ignition switch ON (II), and check whether the other indicator lights come on or not (charging system, etc.).

Do the other indicator lights come on?

YES

Check the No. 24 (15 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES

Replace the No. 24 (15 A) fuse, and check that the SRS indicator light comes on.

Does the SRS indicator light come on?

YES

END

NO

END

NO

Check for an open in the wire harness between fuse No. 24 (15 A) and the gauge assembly, and repair. Check that the SRS indicator light comes on.

Does the SRS indicator light come on?

YES

END

NO

Check the SRS unit:
1. Turn the ignition switch OFF.
2. Disconnect the battery negative cable, then the positive cable, and wait for three minutes.
3. Connect the short connectors (RED) to the airbag connectors (see page 23-25).
4. Disconnect the SRS main harness 18-P connector from the SRS unit.
5. Reconnect the battery positive cable, then the negative cable.
6. Turn the ignition switch ON (II), and check that the SRS indicator light comes on.

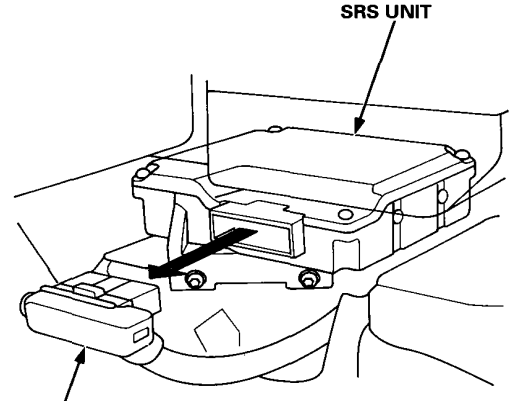
Does the SRS indicator light come on?

YES

Faulty SRS unit; replace the unit.

NO

To page 23-32



(cont'd)

The SRS Indicator Light Doesn't Come On (cont'd)

From page 23-31

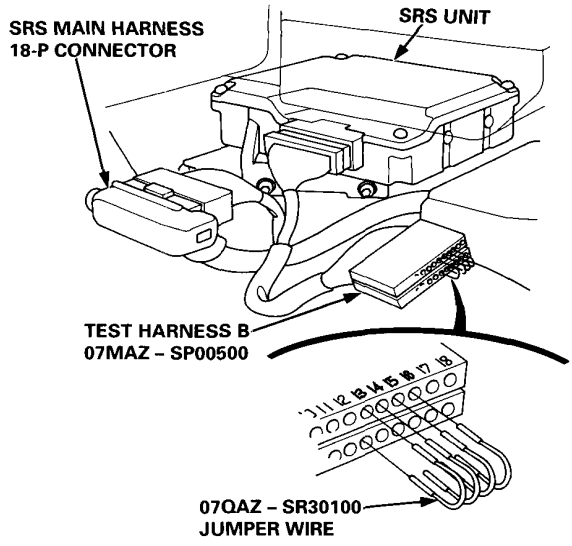
Check the SRS indicator circuit input voltage:
1. Turn the ignition switch OFF.
2. Connect Test Harness B between the SRS unit and the SRS main harness 18-P connector.
3. Connect jumper wires, as shown, to the No. 13, 14, 15, and 16 terminals on rows A (SRS unit end) and B (SRS main harness end) of Test Harness B.
   NOTE: Be careful not to connect the jumper wires to other terminals.
4. Connect a voltmeter between terminals A11 (+) and A5 (–).
5. Turn the ignition switch ON (II), and measure voltage.

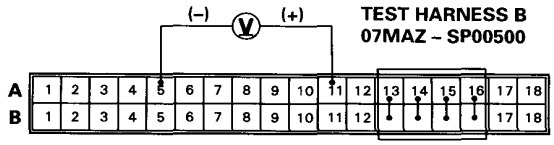
Is there 8.5 V or less for six seconds after the ignition switch has been turned ON (II)?

YES

NO

Faulty SRS unit; replace the SRS unit.





Check the SRS indicator light bulb:
1. Turn the ignition switch OFF, and disconnect Test Harness B.
2. Connect the SRS main harness 18-P connector to the SRS unit.
3. Remove the gauge assembly.
4. Check for blown SRS indicator light bulb.

Is the SRS indicator light bulb OK?

YES

NO

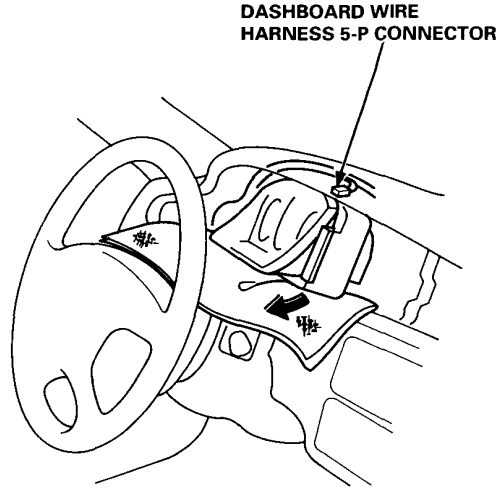
Replace the bulb, and reconnect the gauge assembly connectors. Then turn the ignition switch ON (II).

Does the SRS indicator light come on?

YES

NO

END



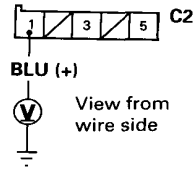
Check the SRS indicator light circuit:
1. Disconnect the dashboard wire harness 5-P connector from the gauge assembly.
2. Connect a voltmeter between the No. 1 terminal (+) of the 5-P connector and ground.
3. Turn the ignition switch ON (II), and measure voltage.

Is there 8.5 V or less for six seconds after the ignition switch has been turned ON (II)?

YES

NO

Faulty SRS indicator light circuit in the gauge assembly; replace the gauge assembly.



To page 23-33

From page 23-32

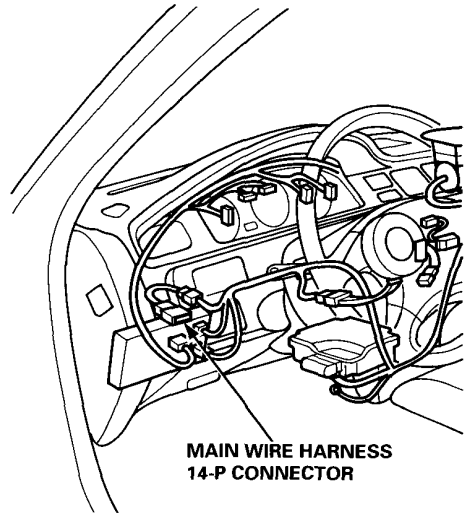
Check the wire harness of the SRS indicator light circuit (1):
1. Turn the ignition switch OFF.
2. Disconnect the main wire harness 14-P connector from the dashboard wire harness.
3. Connect a voltmeter between the No. 14 terminal (+) of the main wire harness 14-P connector and ground.
4. Turn the ignition switch ON (II), and measure voltage.

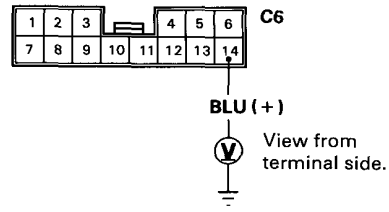
Is there 8.5 V or less for six seconds after the ignition switch has been turned ON?

YES

Short to power in the BLU wire of the dashboard wire harness; replace the harness.

NO





Check the wire harness of the SRS indicator light circuit (2):
1. Turn the ignition switch OFF.
2. Disconnect the SRS main harness 6-P connector from the main wire harness.
3. Connect a voltmeter between the No. 4 terminal (+) of the SRS main harness 6-P connector and ground.
4. Turn the ignition switch ON (II), and measure voltage.

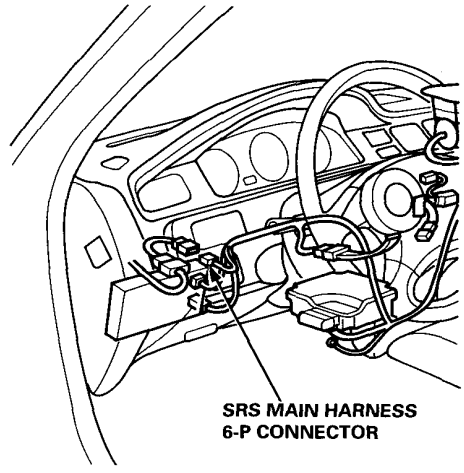
Is there 8.5 V or less for six seconds after the ignition switch has been turned ON (II)?

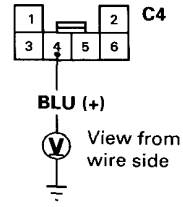
YES

Short to power in the BLU wire of the main wire harness; replace the harness.

NO

Short to power in the BLU wire of the SRS main harness; replace the harness.





DTC 1-1

CAUTION: Whenever the ignition switch is ON (II), or has been turned OFF for less than three minutes, be careful not to bump the SRS unit; the airbags could accidentally deploy and cause damage or injuries.

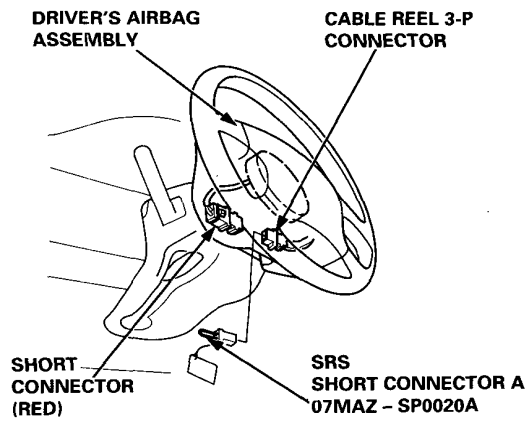
Check for an open in the driver's airbag inflator:
1. Turn the ignition switch OFF.
2. Disconnect the battery negative cable, then disconnect the positive cable, and wait for three minutes.
3. Connect the short connector (RED) to the driver's airbag assembly.
   CAUTION: Do not disconnect the passenger's airbag connector.
4. Connect SRS short connector A to the cable reel 3-P connector.
5. Connect the SCS short connector to the service check connector.
6. Reconnect the battery positive cable, then reconnect the negative cable.
7. Turn the ignition switch ON (II), and record the most recent DTC.

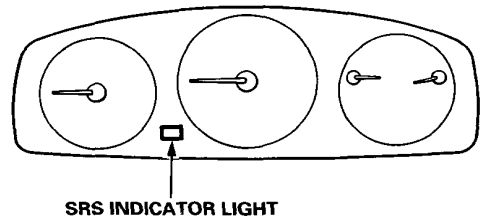
Is DTC 1-1 or DTC 1-2 indicated?

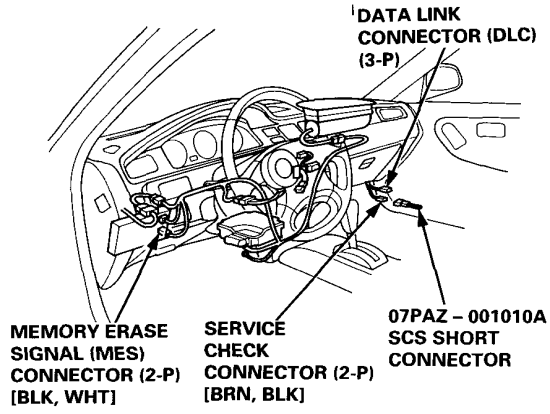
1-1

1-2

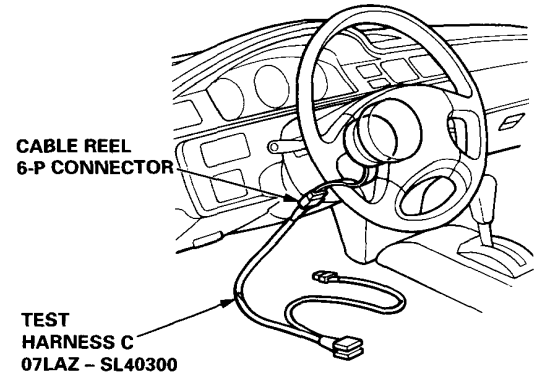
Open in the driver's airbag inflator; replace the driver's airbag assembly (see page 23-56).






DATA LINK CONNECTOR (DLC) (3-P)
MEMORY ERASE SIGNAL (MES) CONNECTOR (2-P) [BLK, WHT]
SERVICE CHECK CONNECTOR (2-P) [BRN, BLK]
07PAZ – 001010A SCS SHORT CONNECTOR

Connect Test Harness C:
1. Turn the ignition switch OFF, and remove the SCS short connector.
2. Disconnect the battery negative cable, then disconnect the positive cable, and wait for three minutes.
3. Remove the glove box, and connect the short connector (RED) to the passenger's airbag assembly (see page 23-25).
4. Remove the dashboard lower cover, and disconnect the cable reel 6-P connector from the SRS main harness.
5. Connect Test Harness C to the cable reel 6-P connector.
   NOTE:
   - Do not connect the battery cables.
   - Disconnect only the SCS short connector.



To page 23-35

From page 23-34

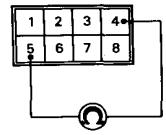
Check for an open in the cable reel:
Check for continuity between the No. 4 and No. 5 terminals of Test Harness C.

Is there continuity?

YES — NO

Open in the cable reel; replace the cable reel (see page 23-62).

TEST HARNESS C
07LAZ – SL40300



Check the SRS Unit (1):
1. Disconnect the SRS main harness 6-P connector from the cable reel.
2. Disconnect the SRS main harness 18-P connector from the SRS unit, and connect Test Harness B.
3. Connect jumper wires, as shown, to the No. 13, 14, 15, and 16 terminals on rows A (SRS unit end) and B (SRS main harness end) of Test Harness B.
   NOTE: Be careful not to connect jumper wires to the other terminals.
4. Connect the battery positive cable, then connect the negative cable.
5. Connect a voltmeter between terminals No. A1 (+) and No. A5 (–) of Test Harness B.
6. Turn the ignition switch ON (II), and measure voltage. There should be 9.4 – 14 V.
7. Turn the ignition switch OFF, and measure resistance between terminals No. A7 and A5. There should be 0.75 – 1.0 kΩ.
   NOTE: The resistance will be unstable if you measure immediately after you turn the ignition switch OFF. Allow it to settle, then take the reading.

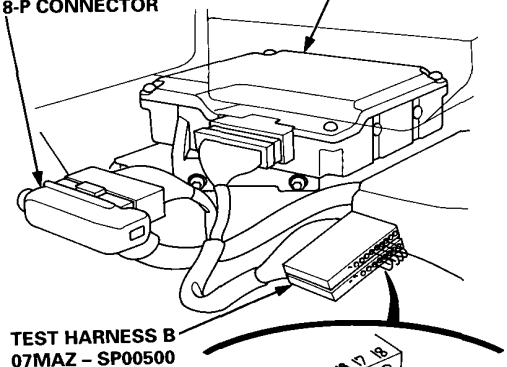
Are voltage and resistance as specified?

YES — NO

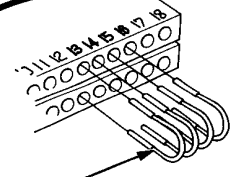
Faulty SRS unit; replace the unit (see page 23-66).

SRS MAIN HARNESS
18-P CONNECTOR

SRS UNIT



TEST HARNESS B
07MAZ – SP00500



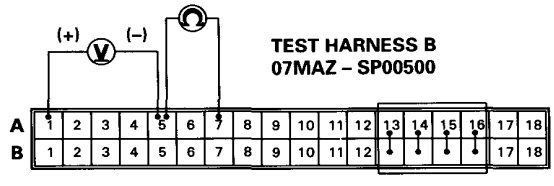
07QAZ – SR30100
JUMPER WIRE

Check for an open in the SRS main harness:
1. Turn the ignition switch OFF.
2. Check for continuity between terminals No. B1 and No. B7 of Test Harness B.

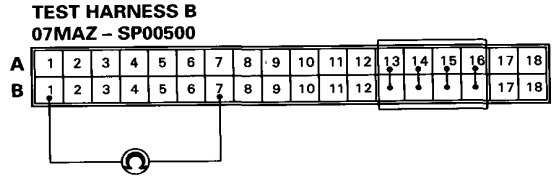
Is there continuity?

YES — NO

Open in the SRS main harness; replace the harness.



The problem has disappeared due to disconnecting and connecting the connectors. Be sure all terminals make good contact, and recheck the system (see Troubleshooting of Intermittent Failures on page 23-28).



DTC 1-2

CAUTION: Whenever the ignition switch is ON (II), or has been turned OFF for less than three minutes, be careful not to bump the SRS unit; the airbags could accidentally deploy and cause damage or injuries.

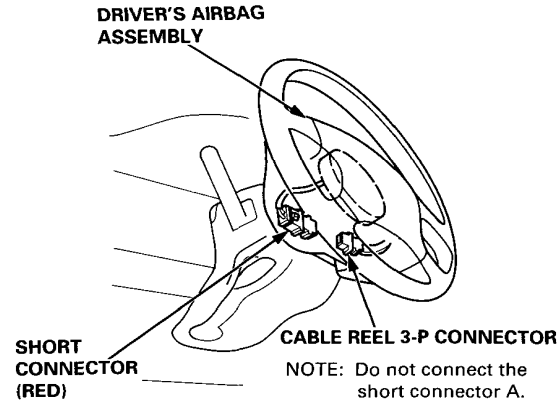
Check for a short to another wire in the driver's airbag inflator:
1. Turn the ignition switch OFF.
2. Disconnect the battery negative cable, then disconnect the positive cable, and wait for three minutes.
3. Connect the short connector (RED) to the driver's airbag connector.
   CAUTION:
   - **Do not connect short connector A to the cable reel 3-P connector.**
   - **Do not disconnect the passenger's airbag connector.**
4. Connect the SCS short connector to the service check connector (2-P).
5. Reconnect the battery positive cable, then connect the negative cable.
6. Turn the ignition switch ON (II), and record the most recent DTC.

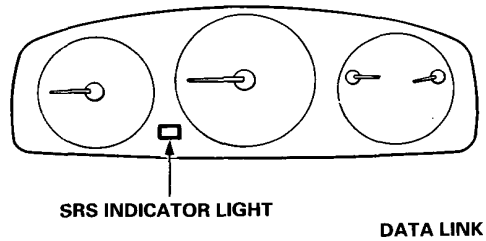
Is DTC 1-2 or DTC 1-1 indicated?

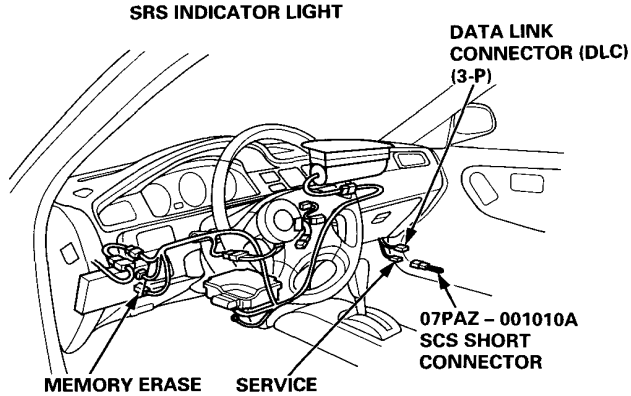
1-2

1-1

Short in the driver's airbag inflator; replace the driver's airbag assembly (see page 23-56).






DATA LINK CONNECTOR (DLC) (3-P)
07PAZ – 001010A SCS SHORT CONNECTOR
MEMORY ERASE SIGNAL (MES) CONNECTOR (2-P) [BLK, WHT]
SERVICE CHECK CONNECTOR (2-P) [BRN, BLK]

Check for a short in the cable reel:
1. Turn the ignition switch OFF.
   NOTE: Do not disconnect the SCS short connector.
2. Remove the dashboard lower cover, and disconnect the SRS main harness 6-P connector from the cable reel.
3. Turn the ignition switch ON (II), and record the most recent DTC.

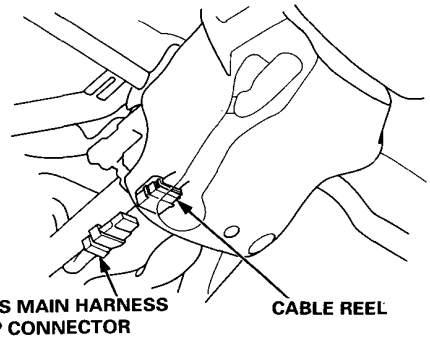
Is DTC 1-2 or DTC 1-1 indicated?

1-2

1-1

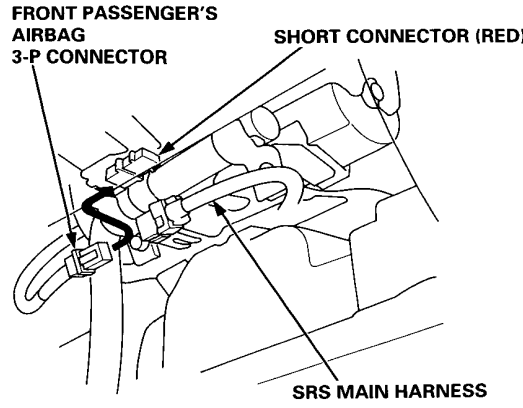
Short in the cable reel; replace the cable reel (see page 23-62).

To page 23-37

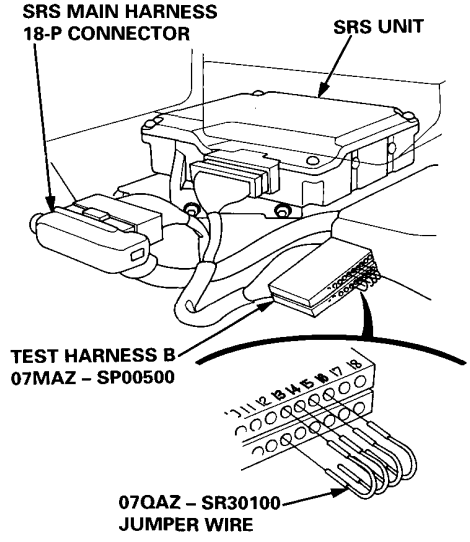


From page 23-36

Connect Test Harness B:
1. Turn the ignition switch OFF, and disconnect the SCS short connector.
2. Disconnect the battery negative cable, then disconnect the positive cable, and wait for three minutes.
3. Remove the glove box, and connect the short connector (RED) to the passenger's airbag 3-P connector.
4. Disconnect the SRS main harness 18-P connector from the SRS unit, and connect Test Harness B between the SRS unit and the 18-P connector.



Check the SRS Unit:
1. Connect jumper wires, as shown, to the No. 13, 14, 15, and 16 terminals on rows A (SRS unit end) and B SRS main harness end) of Test Harness B.
   NOTE: Do not connect jumper wires to the other terminals.
2. Connect the battery positive cable, then connect the negative cable.
3. Connect a voltmeter between the No. A1 (+) and A5 (–) terminals of Test Harness B.
4. Turn the ignition switch ON (II), and measure voltage. There should be 9.4 – 14 V.
5. Connect the voltmeter between the No. A7 and A5 terminals of Test Harness B, and measure voltage. There should be 0.5 V or less.

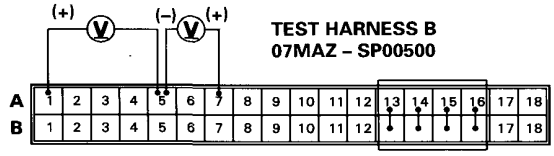


Are the voltages as specified?

YES

NO → **Faulty SRS unit; replace the unit (see page 23-66).**

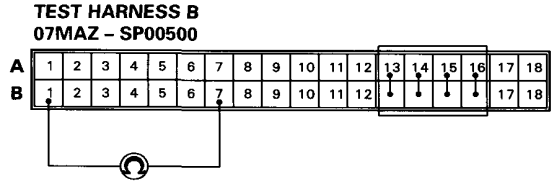
Check for a short in the SRS main harness:
1. Turn the ignition switch OFF.
2. Check for continuity between the No. B1 and B7 terminals of Test Harness B.
   NOTE: Do not connect the cable reel 6-P connector.



Is there continuity?

YES

NO → **Short in the SRS main harness; replace the SRS main harness.**



The problem has disappeared due to disconnecting and connecting the connectors. Be sure all terminals make good contact, and recheck the system (see Troubleshooting of Intermittent Failures on page 23-28).

DTC 1-3

CAUTION: Whenever the ignition switch is ON (II), or has been turned OFF for less than three minutes, be careful not to bump the SRS unit; the airbags could accidentally deploy and cause damage or injuries.

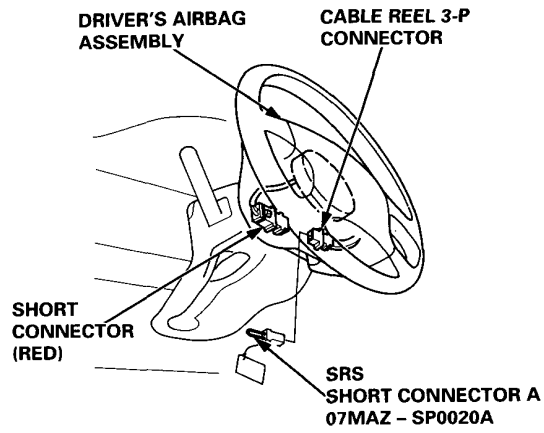
Check for a short to power in the driver's airbag inflator:
1. Turn the ignition switch OFF.
2. Disconnect the battery negative cable, then disconnect the positive cable, and wait for three minutes.
3. Connect the short connector (RED) to the driver's airbag connector.
4. Connect SRS short connector A to the cable reel 3-P connector.
   CAUTION: Do not disconnect the passenger's airbag connector.
5. Connect the SCS short connector to the service check connector.
6. Reconnect the battery positive cable, then connect the negative cable.
7. Turn the ignition switch ON (II), and record the most recent DTC.

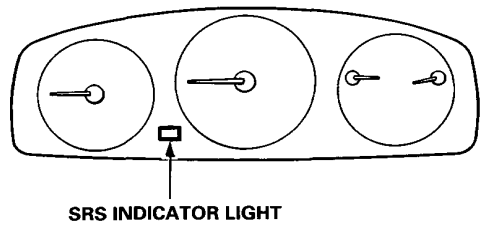
Is DTC 1-3 or DTC 1-2 indicated?

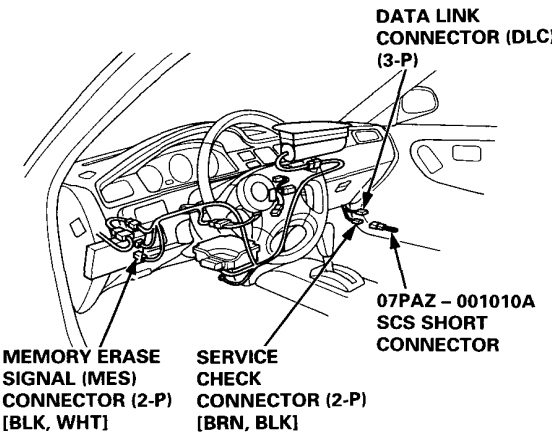
1-3

Short to power in the driver's airbag inflator; replace the driver's airbag assembly (see page 23-56).

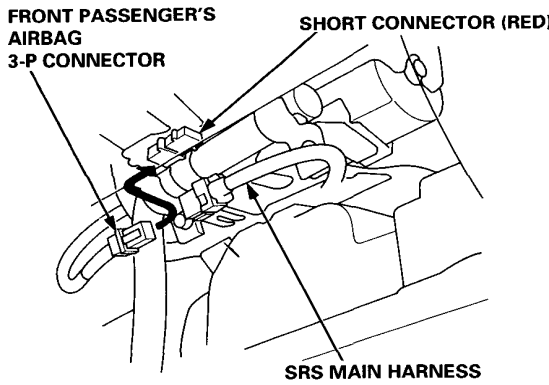
1-2






DATA LINK CONNECTOR (DLC) (3-P)
07PAZ – 001010A SCS SHORT CONNECTOR
MEMORY ERASE SIGNAL (MES) CONNECTOR (2-P) [BLK, WHT]
SERVICE CHECK CONNECTOR (2-P) [BRN, BLK]

Connect Test Harness B:
1. Turn the ignition switch OFF, and remove the SCS short connector.
2. Disconnect the battery negative cable, then disconnect the positive cable, and wait for three minutes.
3. Remove the glove box, and connect the short connector (RED) to the passenger's airbag connector.
4. Disconnect the SRS main harness 18-P connector from the SRS unit, and connect Test Harness B between the SRS unit and the 18-P connector.



To page 23-39

From page 23-38

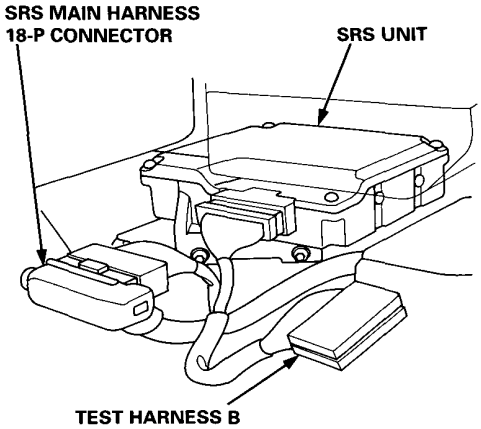
Check the SRS Unit:
1. Connect the battery positive cable, then connect the negative cable.
2. Connect a voltmeter between the No. B1 and B5 terminals.
   NOTE: Do not connect any jumper wires to Test Harness B.
3. Turn the ignition switch ON (II), and measure voltage. There should be 0.5 V or less.
4. Connect the voltmeter between the terminals No. B5 and B7, and measure voltage. There should be 0.5 V or less.

Are the voltages as specified?

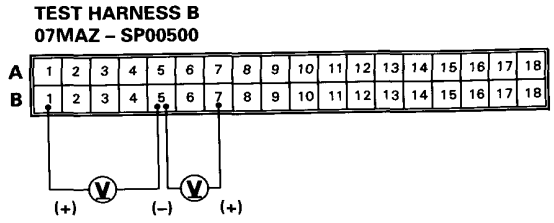
YES

Faulty SRS unit; replace the unit (see page 23-66).

NO



NOTE: Do not connect the jumper wires



Connect Test Harness C, and check for a short to power in the cable reel:
1. Turn the ignition switch OFF.
2. Remove the dashboard lower cover, and disconnect the cable reel 6-P connector from the SRS main harness.
3. Connect Test Harness C to the cable reel 6-P connector.
4. Connect a voltmeter between the No. 4 terminal of Test Harness C and ground.
5. Turn the ignition switch ON (II), and measure voltage. There should be 0.5 V or less.
6. Connect the voltmeter between the No. 5 terminal and ground, and measure voltage. There should be 0.5 V or less.

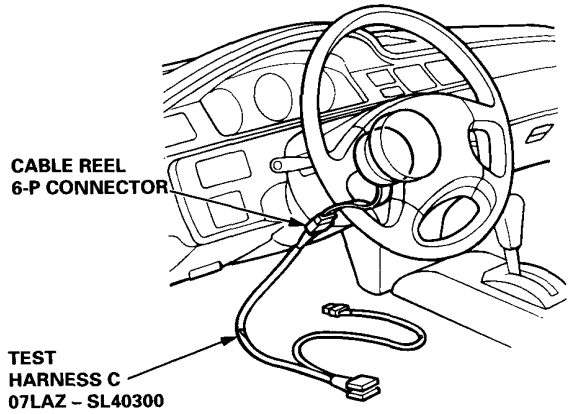
Are voltages as specified?

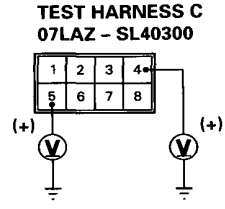
YES

Short to power in the cable reel; replace the cable reel (see page 23-62).

NO

Short to power in the SRS main harness; replace the harness.





DTC 1-4

CAUTION: Whenever the ignition switch is ON (II), or has been turned OFF for less than three minutes, be careful not to bump the SRS unit; the airbags could accidentally deploy and cause damage or injuries.

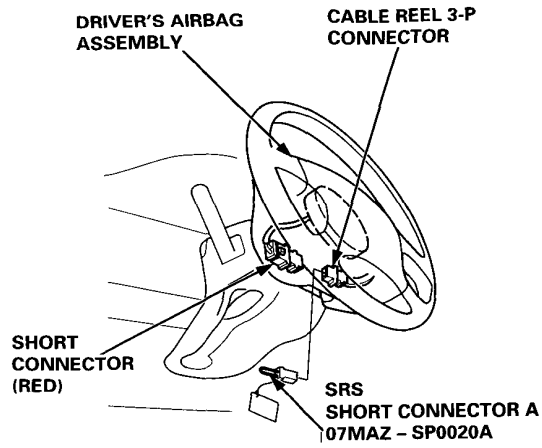
Check for a short to ground in the driver's airbag inflator:
1. Turn the ignition switch OFF.
2. Disconnect the battery negative cable, then disconnect the positive cable, and wait for three minutes.
3. Connect the short connector (RED) to the driver's airbag connector.
4. Connect SRS short connector A to the cable reel 3-P connector.
   CAUTION: Do not disconnect the passenger's airbag connector.
5. Connect the SCS short connector to the service check connector.
6. Reconnect the battery positive cable, then connect the negative cable.
7. Turn the ignition switch ON (II), and record the most recent DTC.

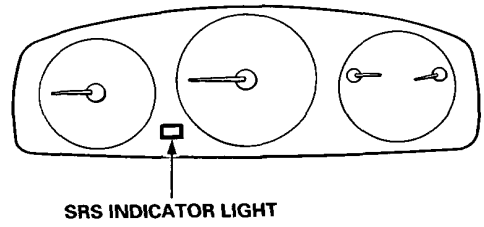
Is DTC 1-4 or DTC 1-2 indicated?

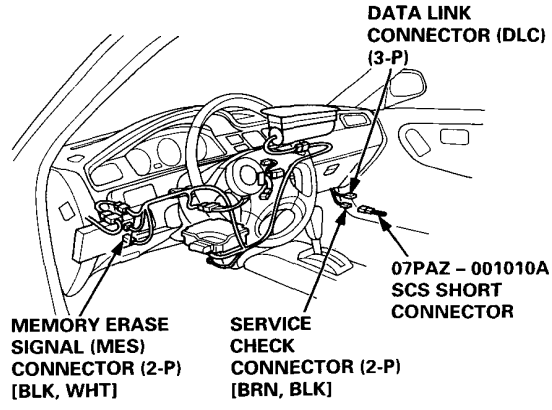
1-4

1-2

Short to ground in the driver's airbag inflator; replace the driver's airbag assembly (see page 23-56).

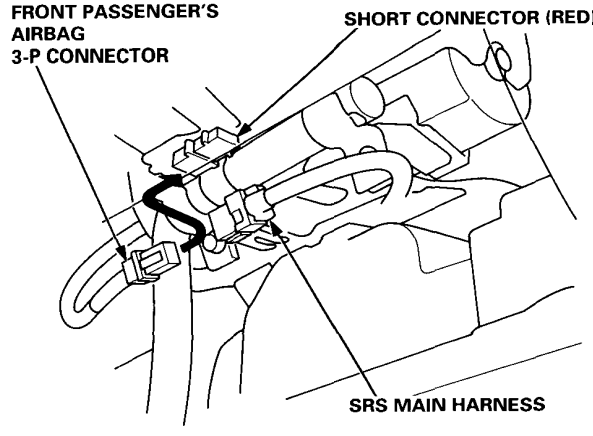





DATA LINK CONNECTOR (DLC) (3-P)
07PAZ - 001010A SCS SHORT CONNECTOR
MEMORY ERASE SIGNAL (MES) CONNECTOR (2-P) [BLK, WHT]
SERVICE CHECK CONNECTOR (2-P) [BRN, BLK]

Connect Test Harness B:
1. Turn the ignition switch OFF, and remove the SCS short connector.
2. Disconnect the battery negative cable, then disconnect the positive cable, and wait for three minutes.
3. Remove the glove box, and connect the short connector (RED) to the passenger's airbag connector.
4. Disconnect the SRS main harness 18-P connector from the SRS unit, and connect Test Harness B between the SRS unit and the 18-P connector.

To page 23-41



From page 23-40

Check the SRS Unit:

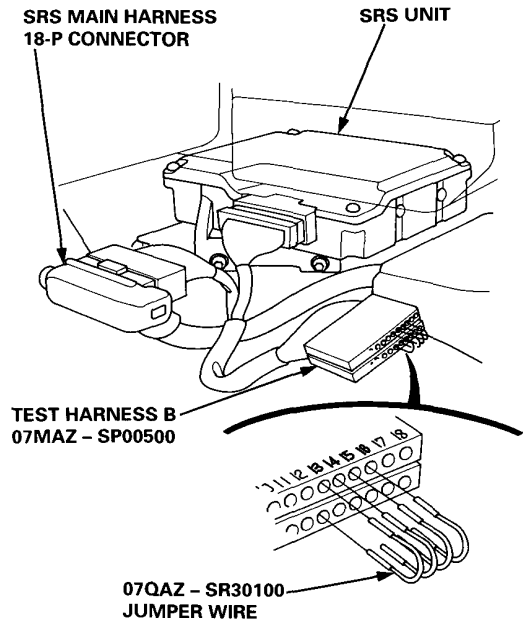
1. Connect jumper wires to the No. 13, 14, 15, and 16 terminals on rows A (SRS unit end) and B (SRS main harness end) of Test Harness B.
   NOTE: Do not connect jumper wires to the other terminals.
2. Connect the battery positive cable, then connect the negative cable.
3. Connect a voltmeter between the No. A1 (+) and A5 (–) terminals of Test Harness B.
4. Turn the ignition switch ON (II), and measure voltage. There should be 9.4 – 14 V.
5. Turn the ignition switch OFF, and measure resistance between the No. A7 and A5 terminals. There should be 0.75 – 1.0 kΩ.
   NOTE: The resistance will be unstable if you measure immediately after you turn the ignition switch OFF. Allow it to settle, then take the reading.

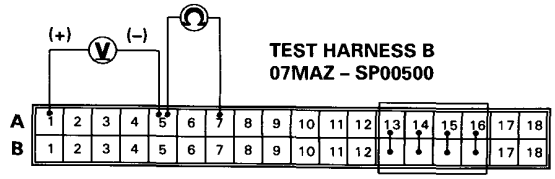
Are voltage and resistance as specified?

YES

NO

Faulty SRS unit; replace the unit (see page 23-66).





Connect Test Harness C, and check for a short to ground in the cable reel:

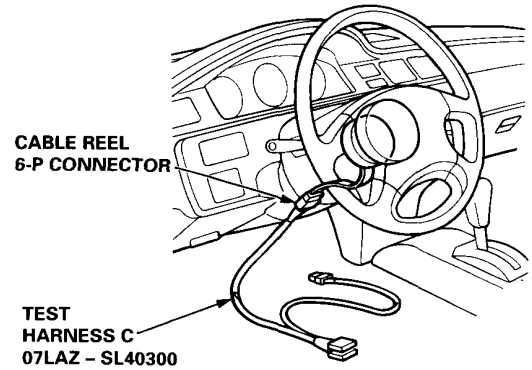
1. Turn the ignition switch OFF.
2. Remove the dashboard lower cover, and disconnect the cable reel 6-P connector from the SRS main harness.
3. Connect Test Harness C to the cable reel 6-P connector.
4. Check for continuity between the No. 4 terminal of Test Harness C and ground, and between the No. 5 terminal of Test Harness C and ground.

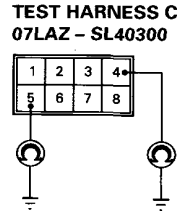
Is there continuity?

YES

NO

Short to ground in the cable reel; replace the cable reel (see page 23-62).





To page 23-42

(cont'd)

DTC 1-4 (cont'd)

From page 23-41

Check for a short to ground in the SRS main harness:
1. Disconnect Test Harness C from the cable reel 6-P connector, and reconnect the cable reel 6-P connector to the SRS main harness.
2. Check for continuity between the No. B1 and B5 terminals, and the No. B5 and B7 terminals of Test Harness B.
   CAUTION:
   - **Make sure the ignition switch is turned OFF.**
   - **Do not disconnect the SRS short connector A from the cable reel 3-P connector.**

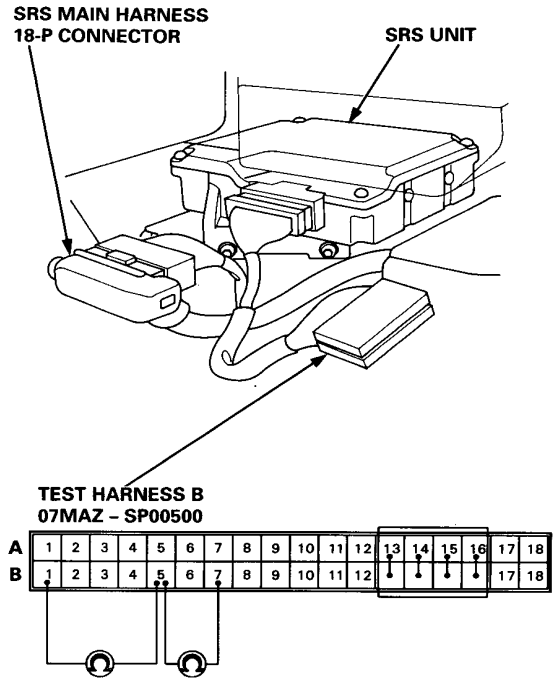
Is there continuity?

YES

Short to ground in the SRS main harness; replace the harness.

NO

The problem has disappeared due to disconnecting and connecting the connectors. Be sure all terminals make good contact, and recheck the system (see Troubleshooting of Intermittent Failures on page 23-28).



DTC 2-1

CAUTION: Whenever the ignition switch is ON (II), or has been turned OFF for less than three minutes, be careful not to bump the SRS unit; the airbags could accidentally deploy and cause damage or injuries.

Check for an open in the passenger's airbag inflator:
1. Turn the ignition switch OFF.
2. Disconnect the battery negative cable, then disconnect the positive cable, and wait for three minutes.
3. Connect the short connector (RED) to the passenger's airbag connector.
4. Connect the SRS short connector A to the SRS main harness 3-P connector.
   CAUTION: Do not disconnect the driver's airbag connector.
5. Connect the SCS short connector to the service check connector.
6. Reconnect the battery positive cable, then connect the negative cable.
7. Turn the ignition switch ON (II), and record the most recent DTC.

Is DTC 2-1 or DTC 2-2 indicated?

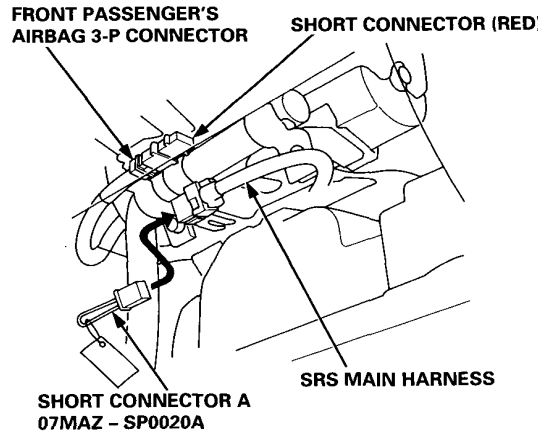
2-1

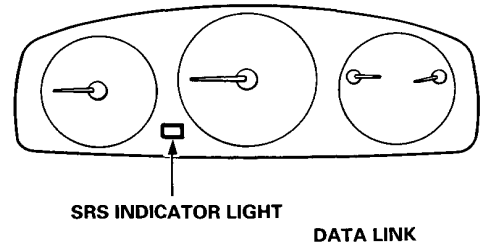
2-2

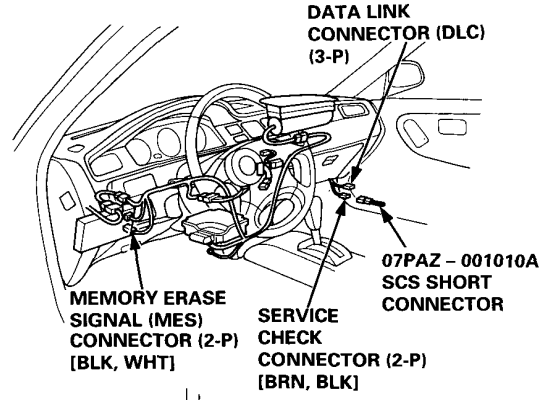
Open in the passenger's airbag inflator; replace the passenger's airbag assembly (see page 23-56).

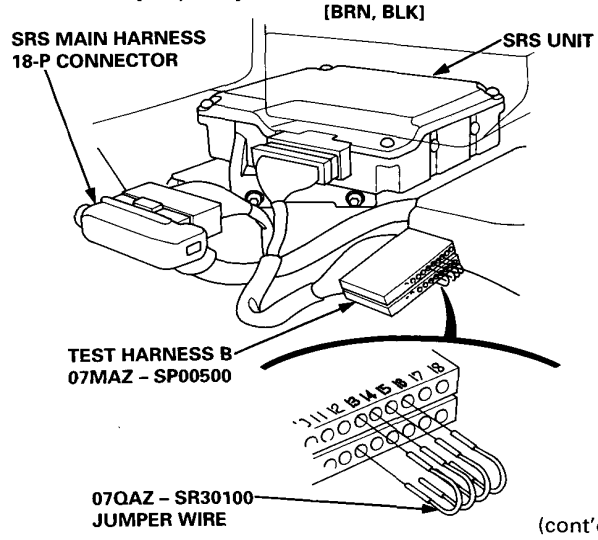
Connect Test Harness B:
1. Turn the ignition switch OFF, and remove the SCS short connector.
2. Disconnect the battery negative cable, then disconnect the positive cable, and wait for three minutes.
3. Connect the short connector (RED) to the driver's airbag connector.
4. Disconnect the SRS main harness 18-P connector from the SRS unit, and connect Test Harness B between the SRS unit and the 18-P connector.
5. *Connect jumper wires to the No. 13, 14, 15, and 16 terminals on rows A (SRS unit end) and B (SRS main harness end) of Test Harness B.*
   NOTE: Do not connect jumper wires to the other terminals.

To page 23-44






DATA LINK CONNECTOR (DLC) (3-P)
07PAZ – 001010A SCS SHORT CONNECTOR
MEMORY ERASE SIGNAL (MES) CONNECTOR (2-P) [BLK, WHT]
SERVICE CHECK CONNECTOR (2-P) [BRN, BLK]



(cont'd)

DTC 2-1 (cont'd)

From page 23-43

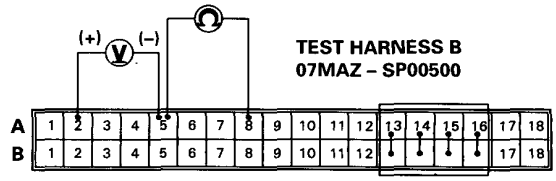
Check the SRS unit:
1. Connect the battery positive cable, then connect the negative cable.
2. Connect a voltmeter between terminals No. A2 and A5 of Test Harness B.
3. Turn the ignition switch ON (II), and measure voltage. There should be 9.4 – 14 V.
4. Turn the ignition switch OFF, and measure resistance between terminals No. A8 and A5. There should be 0.75 – 1.0 kΩ.
   NOTE: The resistance will be unstable if you measure immediately after you turn the ignition switch OFF. Allow it to settle, then take the reading.

Are voltage and resistance as specified?

YES

NO

Faulty SRS unit; replace the SRS unit (see page 23-66).



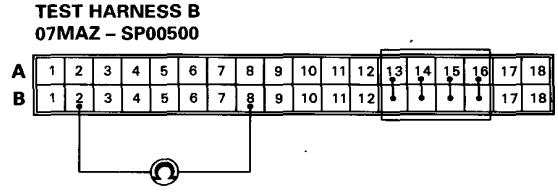
Check for an open in the SRS main harness:
1. Turn the ignition switch OFF.
2. Check for continuity between terminals No. B2 and B8 of Test Harness B.
   CAUTION: Do not disconnect SRS short connector A from the SRS main harness.

Is there continuity?

YES

NO

Open in the SRS main harness; replace the harness.



The problem has disappeared due to disconnecting and connecting the connectors. Be sure all terminals make good contact, and recheck the system (see Troubleshooting of Intermittent Failures on page 23-28).

DTC 2-2

CAUTION: Whenever the ignition switch is ON (II), or has been turned OFF for less than three minutes, be careful not to bump the SRS unit; the airbags could accidentally deploy and cause damage or injuries.

Check for a short to another wire in the passenger's airbag inflator:
1. Turn the ignition switch OFF.
2. Disconnect the battery negative cable, then disconnect the positive cable, and wait for three minutes.
3. Connect the short connector (RED) to the passenger's airbag connector.
   CAUTION:
   - **Do not connect short connector A to the SRS main harness connector.**
   - **Do not disconnect the driver's airbag connector.**
4. Connect the SCS short connector to the service check connector.
5. Reconnect the battery positive cable, then connect the negative cable.
6. Turn the ignition switch ON (II), and record the most recent DTC.

Is DTC 2-2 or DTC 2-1 indicated?

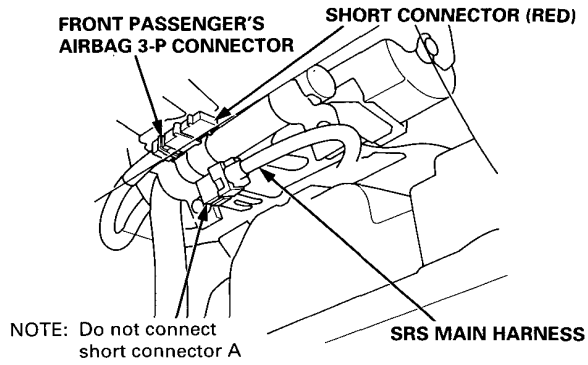
2-2

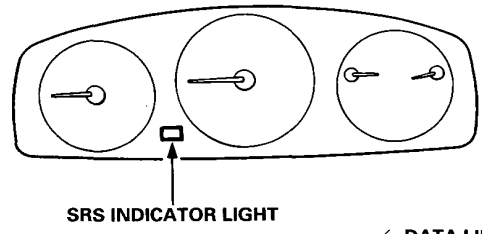
Short to another wire in the passenger's airbag inflator; replace the passenger's airbag assembly (see page 23-56).

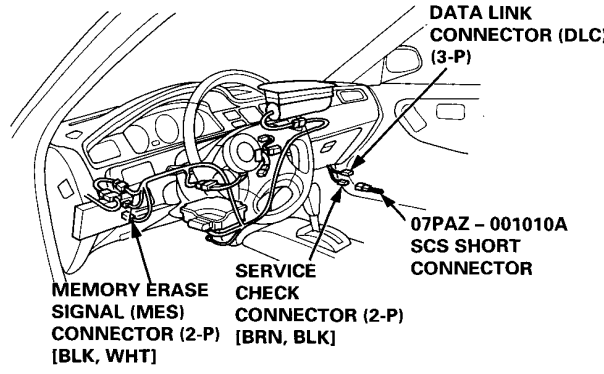
2-1

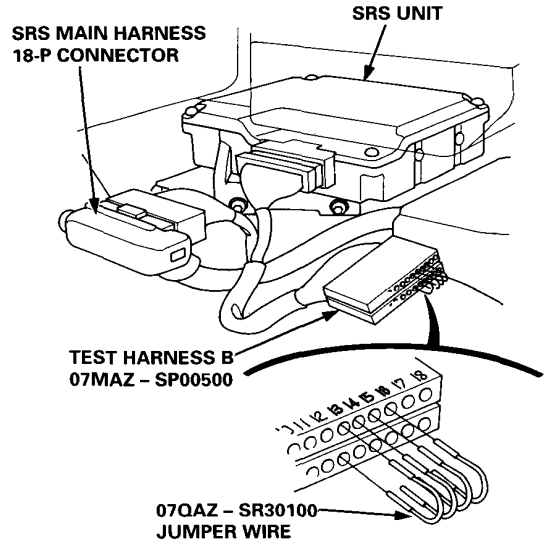
Connect Test Harness B:
1. Turn the ignition switch OFF, and remove the SCS short connector.
2. Disconnect the battery negative cable, then disconnect the positive cable, and wait for three minutes.
3. Connect the short connector (RED) to the driver's airbag connector.
4. Disconnect the SRS main harness 18-P connector from the SRS unit.
5. Connect Test Harness B between the SRS unit and the 18-P connector.
6. Connect the No. 13, 14, 15, and 16 terminals on rows A (SRS unit end) and B (SRS main harness end) of Test Harness B with jumper wires.
   NOTE: Do not connect jumper wires to the other terminals.

To page 23-46






DATA LINK CONNECTOR (DLC) (3-P)
07PAZ – 001010A SCS SHORT CONNECTOR
MEMORY ERASE SIGNAL (MES) CONNECTOR (2-P) [BLK, WHT]
SERVICE CHECK CONNECTOR (2-P) [BRN, BLK]



(cont'd)

DTC 2-2 (cont'd)

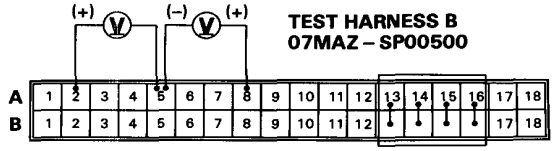
From page 23-45

Check the SRS unit:
1. Connect the battery positive cable, then connect the negative cable.
2. Connect a voltmeter between the No. A2 and A5 terminals of Test Harness B.
3. Turn the ignition switch ON (II), and measure voltage. There should be 9.4 – 14 V.
4. Connect the voltmeter between the No. A8 and A5 terminals of Test Harness B, and measure voltage. There should be 0.5 V or less.

Are voltages as specified?

YES — NO

Faulty SRS unit; replace the SRS unit (see page 23-66).

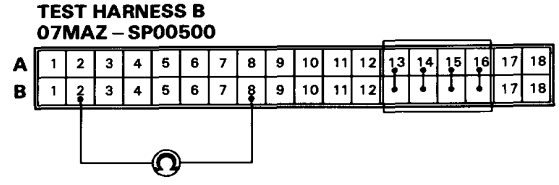


Check for short to another wire in the SRS main harness:
1. Turn the ignition switch OFF.
2. Check for continuity between the No. B2 and B8 terminals of Test Harness B.

Is there continuity?

YES — NO

Short in the SRS main harness; replace the harness.



The problem has disappeared due to disconnecting and connecting the connectors. Be sure all terminals make good contact, and recheck the system (see Troubleshooting of Intermittent Failures on page 23-28).

DTC 2-3

CAUTION: Whenever the ignition switch is ON (II), or has been turned OFF for less than three minutes, be careful not to bump the SRS unit; the airbags could accidentally deploy and cause damage or injuries.

Check for short to power in the passenger's airbag inflator:
1. Turn the ignition switch OFF.
2. Disconnect the battery negative cable, then disconnect the positive cable, and wait for three minutes.
3. Connect the short connector (RED) to the passenger's airbag connector.
4. Connect SRS short connector A to the SRS main harness 3-P connector.
   CAUTION: Do not disconnect the driver's airbag connector.
5. Connect the SCS short connector to the service check connector.
6. Reconnect the battery positive cable, then connect the negative cable.
7. Turn the ignition switch ON (II), and record the most recent DTC.

Is DTC 2-3 or DTC 2-2 indicated?

2-3

Short to power in the passenger's airbag inflator; replace the passenger's airbag assembly (see page 23-56).

2-2

Connect Test Harness B:
1. Turn the ignition switch OFF, and remove the SCS short connector.
2. Disconnect the battery negative cable, then disconnect the positive cable, and wait for three minutes.
3. Connect the short connector (RED) to the driver's airbag connector.
4. Disconnect the SRS main harness 18-P connector from the SRS unit, and connect Test Harness B between the SRS unit and the 18-P connector.
5. Reconnect the battery positive cable, then connect the negative cable.
6. Connect a voltmeter between the No. B2 and B5 terminals of Test Harness B.
7. Turn the ignition switch ON (II), and measure voltage. There should be 0.5 V or less
8. Connect the voltmeter between the No. B8 and B5 terminals of Test Harness B, and measure voltage. There should be 0.5 V or less.

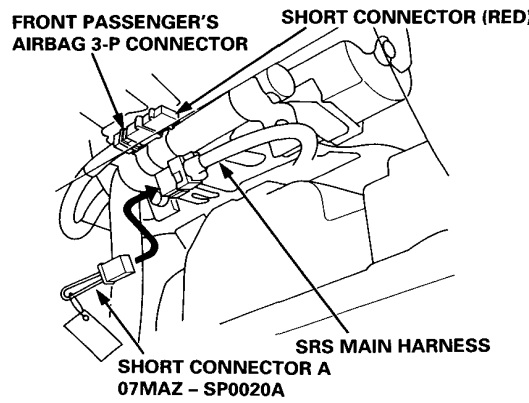
Are voltages as specified?

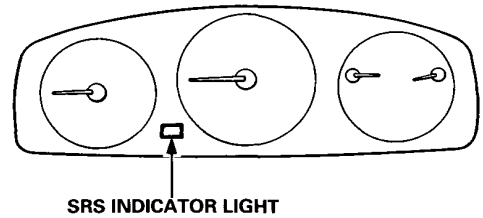
YES

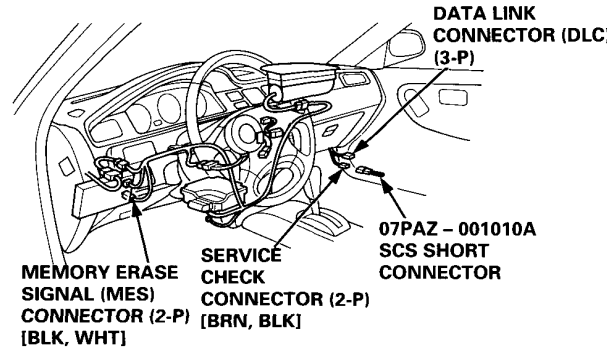
Short to power in the SRS main harness; replace the harness.

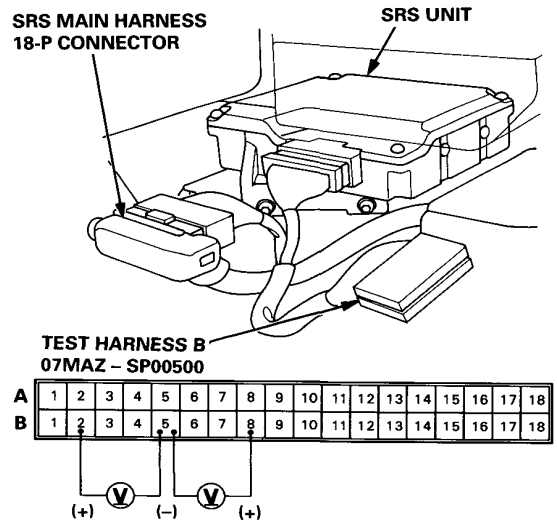
NO

Faulty SRS unit; replace the SRS unit (see page 23-66).






DATA LINK CONNECTOR (DLC) (3-P)
07PAZ – 001010A SCS SHORT CONNECTOR
MEMORY ERASE SIGNAL (MES) CONNECTOR (2-P) [BLK, WHT]
SERVICE CHECK CONNECTOR (2-P) [BRN, BLK]



DTC 2-4

CAUTION: Whenever the ignition switch is ON (II), or has been turned OFF for less than three minutes, be careful not to bump the SRS unit; the airbags could accidentally deploy and cause damage or injuries.

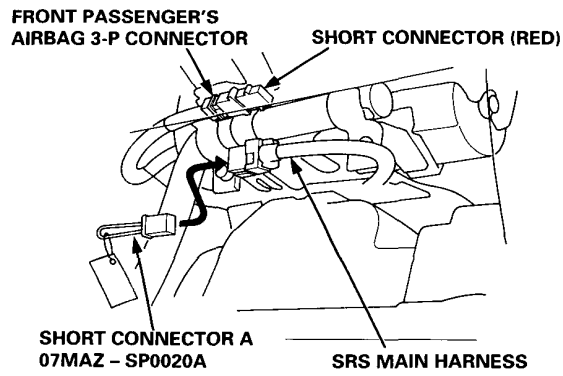
Check for short to ground in the passenger's airbag inflator:
1. Turn the ignition switch OFF.
2. Disconnect the battery negative cable, then disconnect the positive cable, and wait for three minutes.
3. Connect the short connector (RED) to the passenger's airbag connector.
4. Connect SRS short connector A to the SRS main harness 3-P connector.
   CAUTION: Do not disconnect the driver's airbag connector.
5. Connect the SCS short connector to the service check connector.
6. Reconnect the battery positive cable, then connect the negative cable.
7. Turn the ignition switch ON (II), and record the most recent DTC.

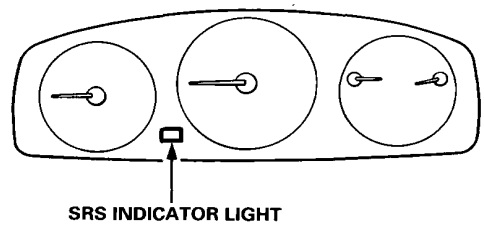
Is DTC 2-4 or DTC 2-2 indicated?

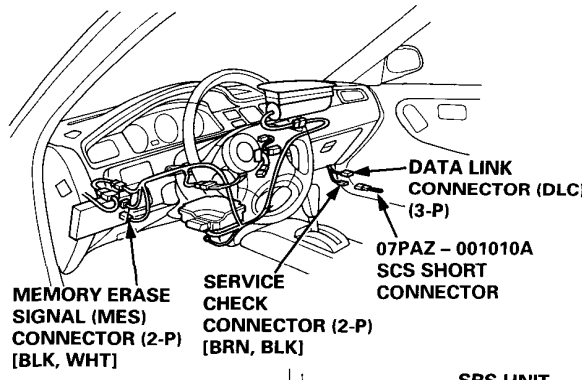
2-4

2-2

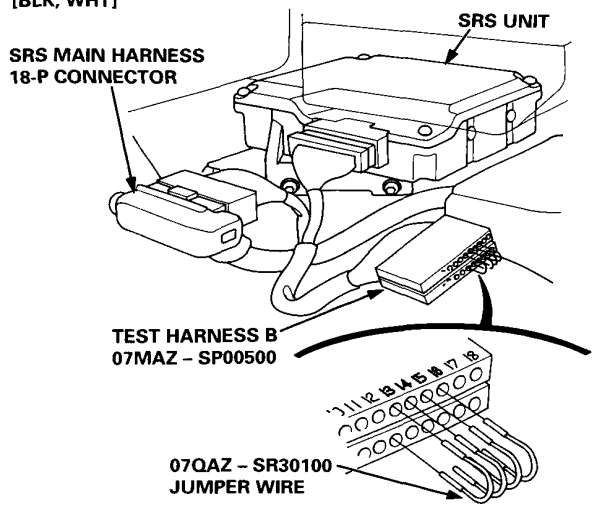
Short to ground in the passenger's airbag inflator; replace the passenger's airbag assembly (see page 23-56).






DATA LINK CONNECTOR (DLC) (3-P)
07PAZ – 001010A SCS SHORT CONNECTOR
MEMORY ERASE SIGNAL (MES) CONNECTOR (2-P) [BLK, WHT]
SERVICE CHECK CONNECTOR (2-P) [BRN, BLK]

Connect Test Harness B:
1. Turn the ignition switch OFF, and remove the SCS short connector.
2. Disconnect the battery negative cable, then disconnect the positive cable, and wait for three minutes.
3. Connect the short connector (RED) to the driver's airbag connector.
4. Disconnect the SRS main harness 18-P connector from the SRS unit, and connect Test Harness B between the SRS unit and the 18-P connector.
5. Connect the No. 13, 14, 15, and 16 terminals on rows A (SRS unit end) and B (SRS main harness end) of Test Harness B with jumper wires.
   NOTE: Do not connect jumper wires to the other terminals.



To page 23-49

From page 23-48

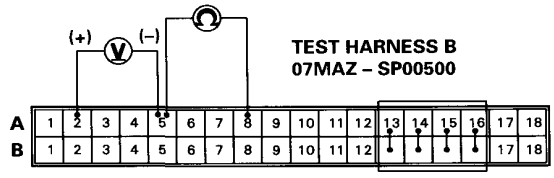
Check the SRS unit:
1. Reconnect the battery positive cable, then connect the negative cable.
2. Connect a voltmeter between the No. A2 and A5 terminals of Test Harness B.
3. Turn the ignition switch ON (II), and measure voltage. There should be 9.4 – 14 V.
4. Turn the ignition switch OFF, and measure resistance between the No. A8 and A5 terminals of Test Harness B. There should be 0.75 – 1.0 kΩ
   NOTE: The resistance will be unstable if you measure immediately after you turn the ignition switch OFF. Allow it to settle, then take the reading.

Are voltage and resistance as specified?

YES

NO

Faulty SRS unit; replace the SRS unit (see page 23-66).



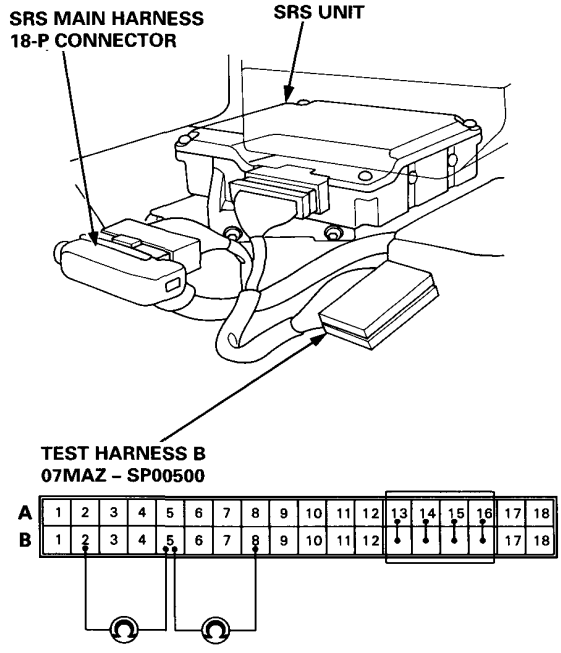
Check for short to ground in the SRS main harness:
1. Check for continuity between the No. B2 and B5 terminals, and the No. B8 and B5 terminals of Test Harness B.
   CAUTION: Do not disconnect short connector A from the SRS main harness 3-P connector.

Is there continuity?

YES

NO

Short to ground in the SRS main harness; replace the harness.



The problem has disappeared due to disconnecting and connecting the connectors. Be sure all terminals make good contact, and recheck the system (see Troubleshooting of Intermittent Failures on page 23-28).

DTC 9-1 or No Code

CAUTION: Whenever the ignition switch is ON (II), or has been turned OFF for less than three minutes, be careful not to bump the SRS unit; the airbags could accidentally deploy and cause damage or injuries.

Check the SRS indicator circuit input voltage:
1. Turn the ignition switch OFF, and disconnect Test Harness B.
2. Connect the SRS main harness 18-P connector to the SRS unit.
3. Disconnect the SRS main harness 6-P connector from the main wire harness.
4. Connect a voltmeter between the No. 4 terminal (+) of the SRS main harness 6-P connector and ground.
5. Turn the ignition switch ON (II), and measure voltage.

Is there 8.5 V or more six seconds after the ignition switch has been turned ON (II)?

YES

Check for short to ground in the SRS indicator light circuit (1):
1. Turn the ignition switch OFF.
2. Check for continuity between the No. 4 terminal (+) of the main wire harness 6-P connector and ground.

Is there continuity (200 Ω or less)?

YES

Check for short to ground in the SRS indicator light circuit (2):
1. Remove the dashboard wire harness 14-P connector from the main wire harness.
2. Check for continuity between the No. 14 terminal (+) of the dashboard wire harness 14-P connector and ground.

Is there continuity (200 Ω or less)?

YES

Failure in the SRS unit due to short to ground in the BLU wire of the main wire harness; replace the main wire harness and the SRS unit.

NO

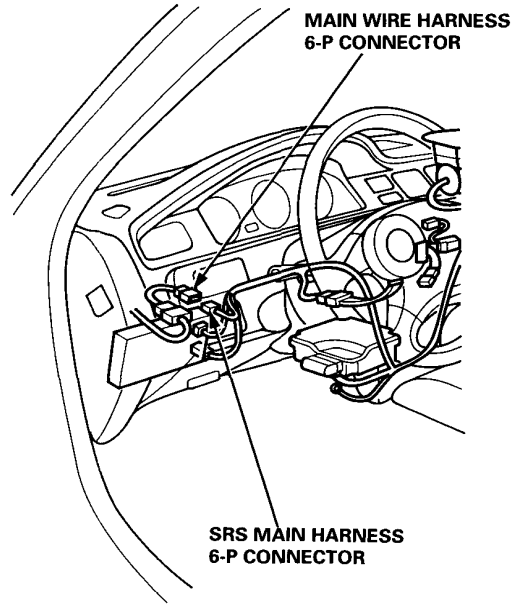
(A) (B)

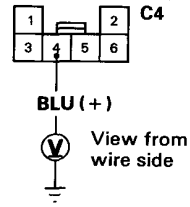
To page 23-51

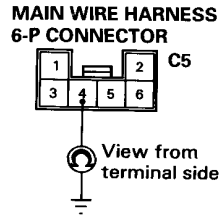
NO

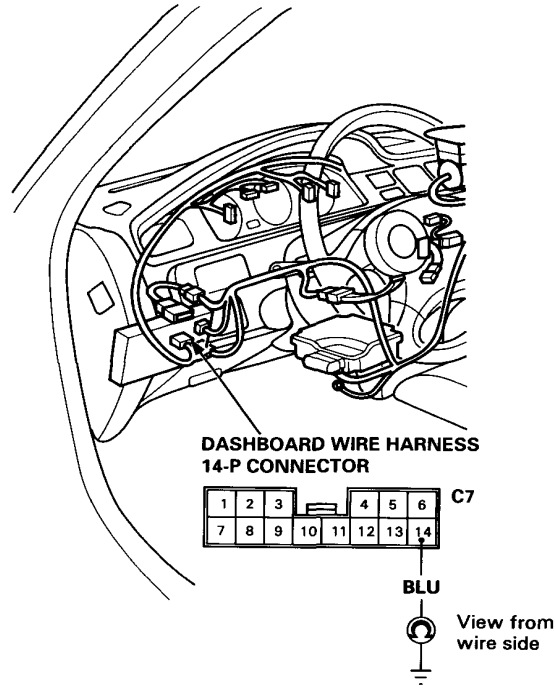
(C)

To page 23-51









From page 23-50

(A) (B)

Check for short to ground in the SRS indicator light circuit (3):
1. Remove the gauge assembly.
2. Check for continuity between the E3 and E5 terminals of the gauge assembly 5-P connector.

Is there continuity (200 Ω or less)?

YES

Failure in the SRS unit due to short to ground in the SRS indicator light circuit in the gauge assembly; replace the gauge assembly and the SRS unit.

NO

Failure in the SRS unit due to short to ground in the BLU wire of the dashboard wire harness; replace the dashboard wire harness and the SRS unit.

From page 23-50

(C)

Check for an open in the SRS main harness:
1. Turn the ignition switch OFF.
2. Disconnect the battery negative cable, then disconnect the positive cable, and wait for three minutes.
3. Connect the short connectors (RED) to the airbag connectors (see page 23-25).
4. Disconnect the SRS main harness 18-P connector from the SRS unit, and connect Test Harness B between the SRS unit and the 18-P connector.
5. Check for continuity between the No. B11 terminal of Test Harness B and the No. 4 terminal of the SRS main harness 6-P connector.

Is there continuity?

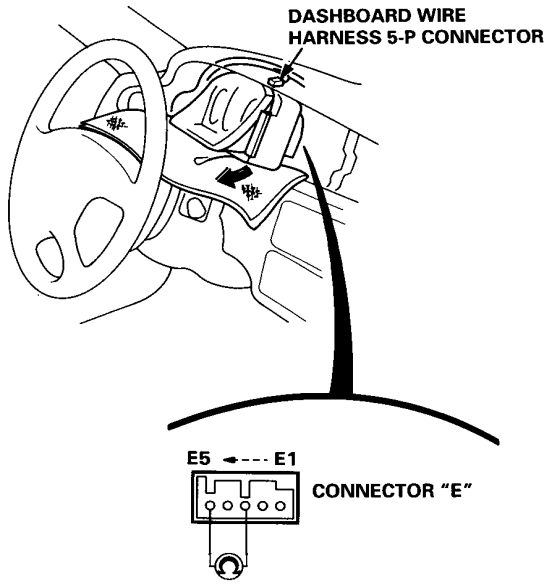
YES

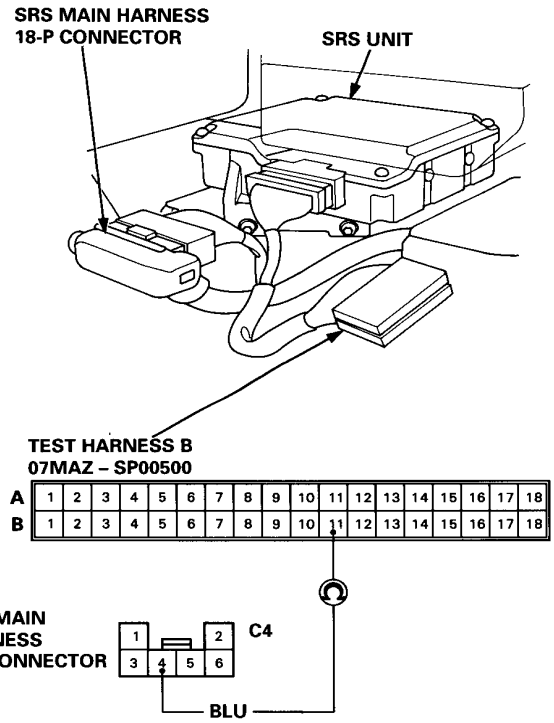
Open in the SRS main harness; replace the harness.

NO

(D) (E)

To page 23-52




SRS MAIN HARNESS 18-P CONNECTOR
SRS UNIT
TEST HARNESS B
07MAZ – SP00500
A 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
B 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
SRS MAIN HARNESS 6-P CONNECTOR
1 2 3 4 5 6
C4
BLU
View from wire side

(cont'd)

DTC 9-1 or No Code (cont'd)

From page 23-51

(D) (E)

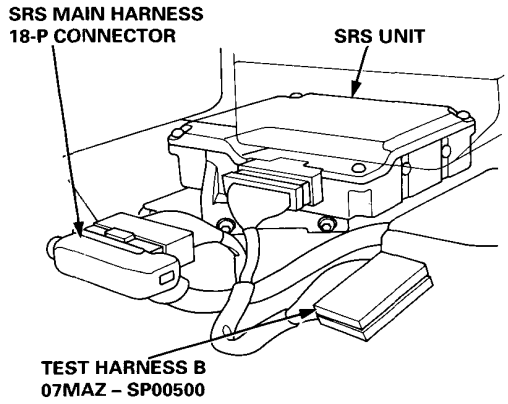
Check for continuity between terminals No. B11 and No. B5 of Test Harness B.

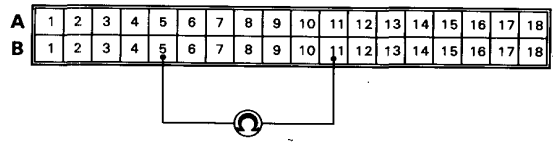
Is there continuity?

YES — NO

Failure in the SRS unit due to short to ground in the SRS main harness; replace the SRS main harness and the SRS unit.

Faulty SRS unit; replace the SRS unit.

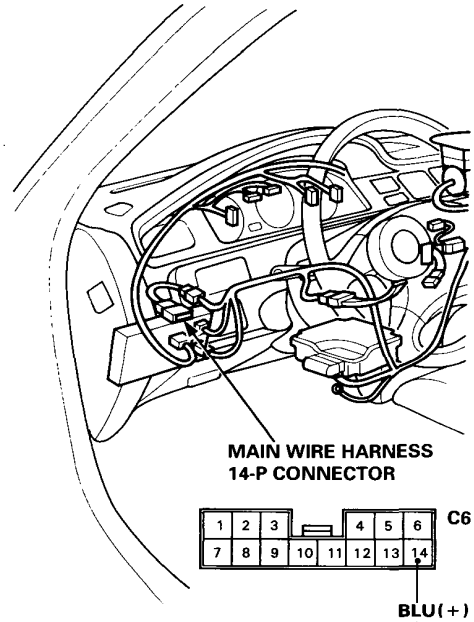




Check the SRS indicator light circuit:
1. Turn the ignition switch OFF.
2. Connect the SRS main harness 6-P connector to the main wire harness.
3. Disconnect the main wire harness 14-P connector from the dashboard wire harness.
4. Connect a voltmeter between the No. 14 terminal (+) of the main wire harness 14-P connector and ground.
5. Turn the ignition switch ON (II), and measure voltage.

Is there 8.5 V or more six seconds after the ignition switch has been turned ON?

YES — NO



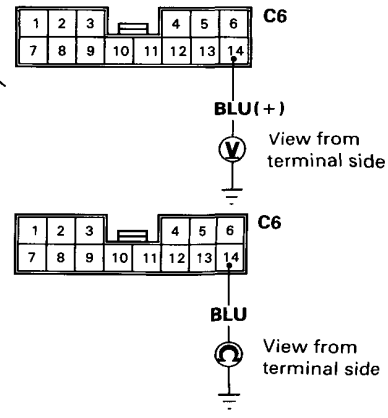
Check the main wire harness:
1. Turn the ignition switch OFF.
2. Check for continuity between the No. 14 terminal of the main wire harness 14-P connector and body ground.

Is there continuity?

YES — NO

Failure in the SRS unit due to short to ground in the BLU wire of the SRS main harness; replace the SRS main harness and the SRS unit.

Open in the BLU wire of the SRS main harness; replace the SRS main harness.



To page 23-53

From page 23-52

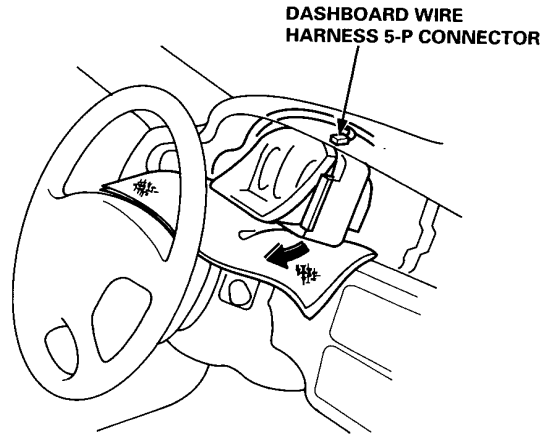
Check the SRS indicator light circuit:
1. Turn the ignition switch OFF.
2. Connect the main wire harness 14-P connector to the dashboard wire harness.
3. Remove the gauge assembly.
4. Disconnect the dashboard wire harness 5-P connector from the gauge assembly.
5. Connect a voltmeter between the No. 1 terminal (+) of the dashboard wire harness 5-P connector and ground.
6. Turn the ignition switch ON (II), and measure voltage.

Is there 8.5 V or more six seconds after the ignition switch has been turned ON (II)?

YES

NO

Faulty SRS indicator light circuit in the gauge assembly; replace the gauge assembly.



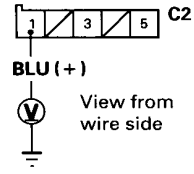
Check the dashboard wire harness:
1. Turn the ignition switch OFF.
2. Check for continuity between the No. 1 terminal of the dashboard wire harness 5-P connector and body ground.

Is there continuity (200 Ω or less)?

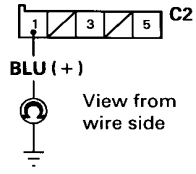
YES

NO

Failure in the SRS unit due to short to ground in the BLU wire of the dashboard wire harness. Replace the dashboard wire harness and the SRS unit.



Open in the BLU wire of the dashboard wire harness; Replace the dashboard wire harness.



DTC 9-2

CAUTION: Whenever the ignition switch is ON (II), or has been turned OFF for less than three minutes, be careful not to bump the SRS unit; the airbags could accidentally deploy and cause damage or injuries.

Check the SRS fuse:
1. Turn the ignition switch OFF.
2. Check for blown No. 25 (10 A) fuse.

Is the fuse OK?

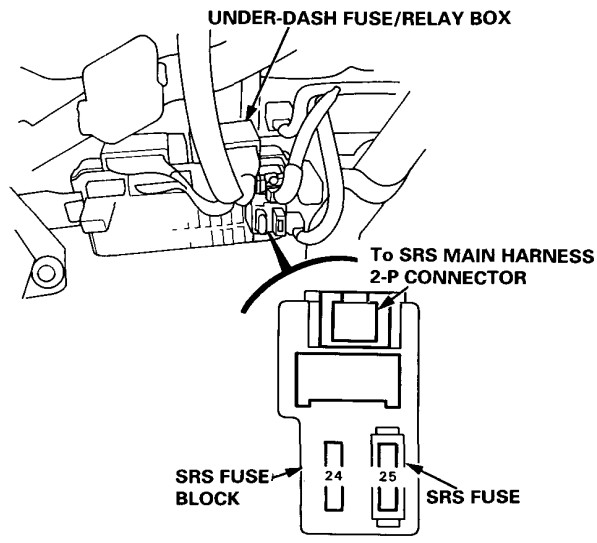
YES — NO

Replace the fuse. Turn the ignition switch ON (II), and check that the fuse doesn't blow.

Does the fuse blow?

YES — NO

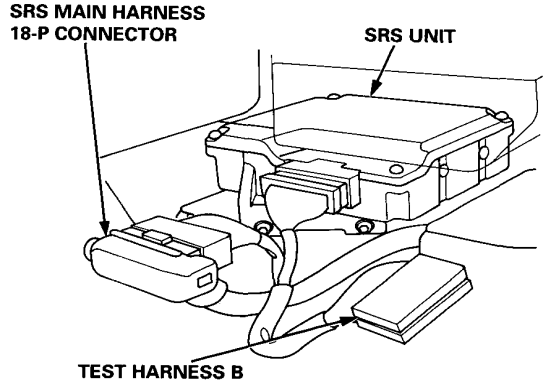
END

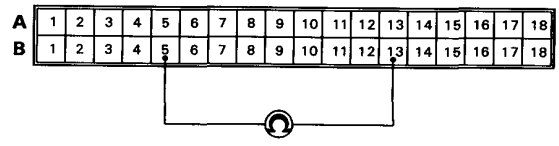


Check for short to ground between the under-dash fuse/relay box and the SRS unit:
1. Turn the ignition switch OFF.
2. Disconnect the battery negative cable, then disconnect the positive cable, and wait for three minutes.
3. Connect the short connectors (RED) to the airbag connectors (see page 23-25).
4. Disconnect the SRS main harness 18-P connector from the SRS unit, and connect Test Harness B between the 18-P connector and the SRS unit.
5. Check for continuity between the No. B13 and B5 terminals of Test Harness B.

Is there continuity?

YES — NO





Check for short to ground in the SRS main harness:
1. Disconnect the SRS main harness 2-P connector from the fuse/relay box.
2. Check for continuity between the No. B13 and B5 terminals of Test Harness B.

Is there continuity?

YES — NO

Short to ground in the SRS main harness; replace the harness.

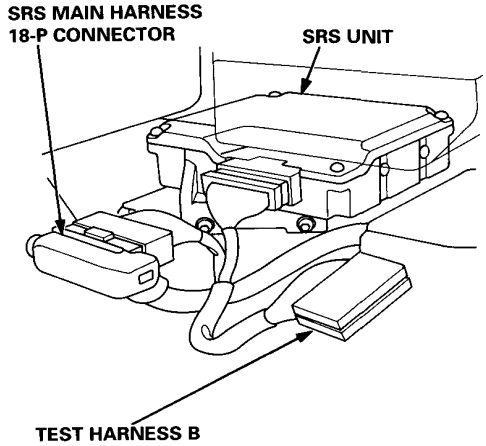
Short to ground in the SRS fuse block; replace the SRS fuse block.

Faulty SRS unit; replace the SRS unit.

To page 23-55

From page 23-54

Connect Test Harness B:
1. Disconnect the negative battery cable, then the positive cable, and wait for three minutes.
2. Connect the short connectors (RED) to the airbag connectors (see page 23-25).
3. Disconnect the SRS main harness 18-P connector from the SRS unit, and connect Test Harness B between the 18-P connector and the SRS unit.
4. Reconnect the battery positive cable, then the negative cable.



Check for an open in the SRS main harness:
1. Connect a voltmeter between the No. B13 and B5 terminals of Test Harness B.
2. Turn the ignition switch ON (II), and measure voltage.

Is there battery voltage?

YES

Faulty SRS unit; replace the SRS unit.

NO

Open in the SRS main harness; replace the harness.

Airbag Assembly

Replacement

⚠ WARNING Store a removed airbag assembly with the pad surface up, if the airbag is improperly stored face down, accidental deployment could propel the unit with enough force to cause serious injury.

CAUTION:

- **Do not install used SRS parts from another car. When repairing, use only new SRS parts.**
- **Carefully inspect the airbag assembly before you install it. Do not install an airbag assembly that shows signs of being dropped or improperly handled, such as dents, cracks or deformation.**
- **Always keep the short connectors (RED) on the airbags when the harness is disconnected.**
- **Do not disassemble or tamper with the airbag assembly.**

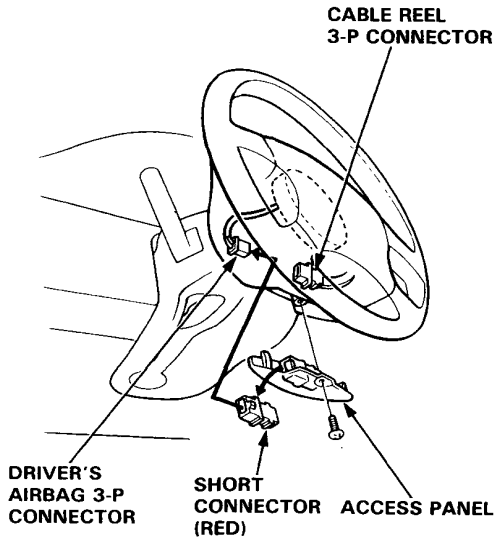
1. Disconnect the battery negative cable, then disconnect the positive cable, and wait at least three minutes.

2. Connect the short connectors (RED) to the airbag side of the connectors:

Driver's Side:

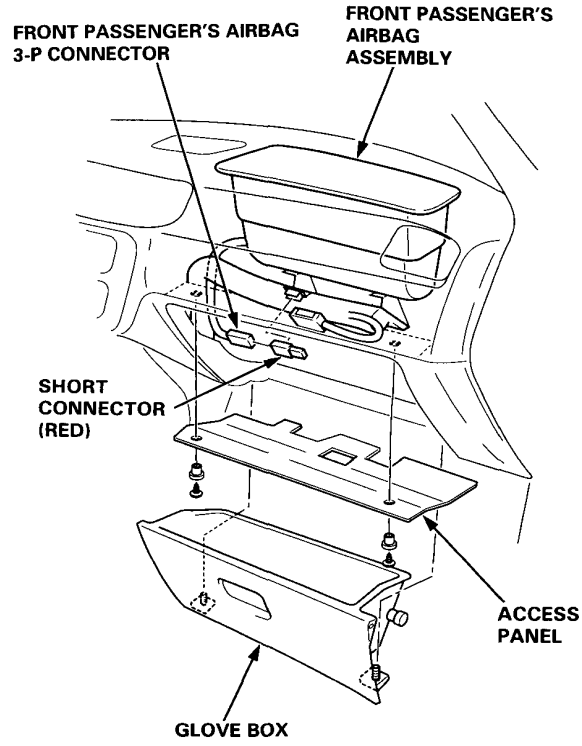
- Remove the access panel from the steering wheel, then remove the short connector (RED) from the panel.

- Disconnect the 3-P connector between the driver's airbag and cable reel, then connect the short connector (RED) to the airbag side of the connector.



Front Passenger's Airbag:

- Remove the glove box and access panel, then remove the short connector (RED) from its holder.

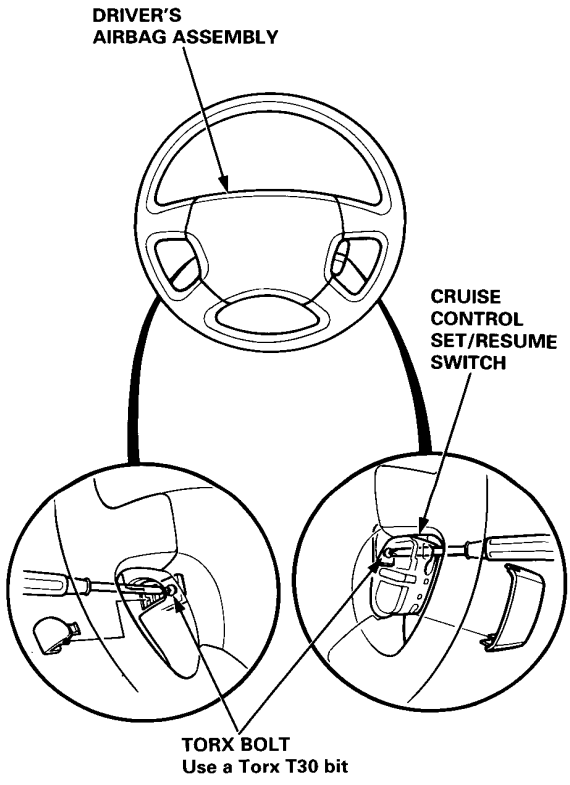


- Disconnect the front passenger's airbag 3-P connector from the SRS main harness, and connect the short connector (RED) to the front passenger's airbag 3-P connector.

3. Remove the airbags:

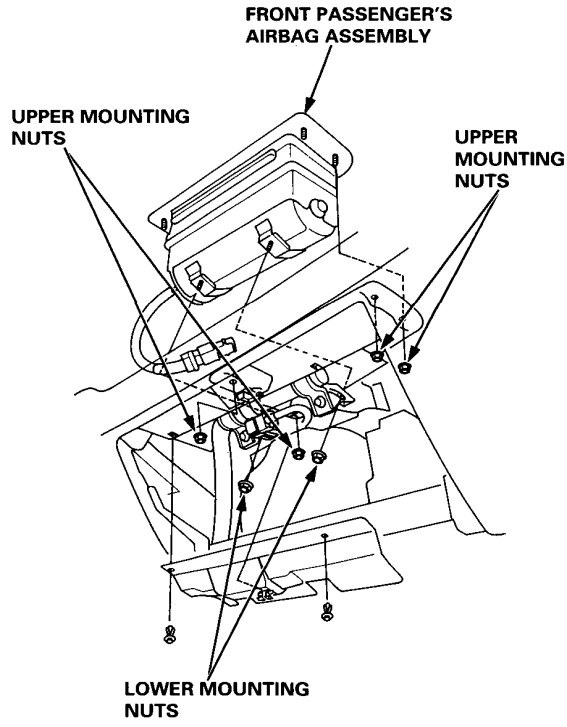
Driver's Side:

- Remove the two Torx bolts using a Torx T30 bit, then remove the driver's airbag assembly.



Front Passenger's Side:

- Remove the six mounting nuts, then carefully lift the front passenger's airbag out of the dashboard.



(cont'd)

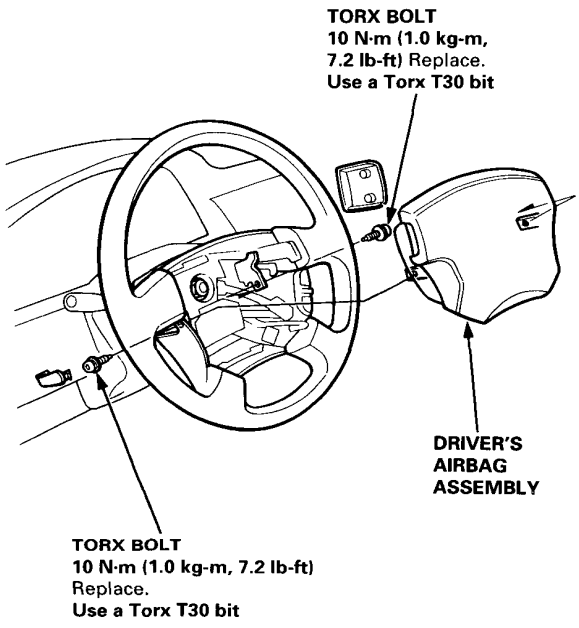
Replacement (cont'd)

CAUTION: Be sure to install the SRS wiring so that it is not pinched or interfering with other car parts.

4. Install the new airbags.

Driver's Side:

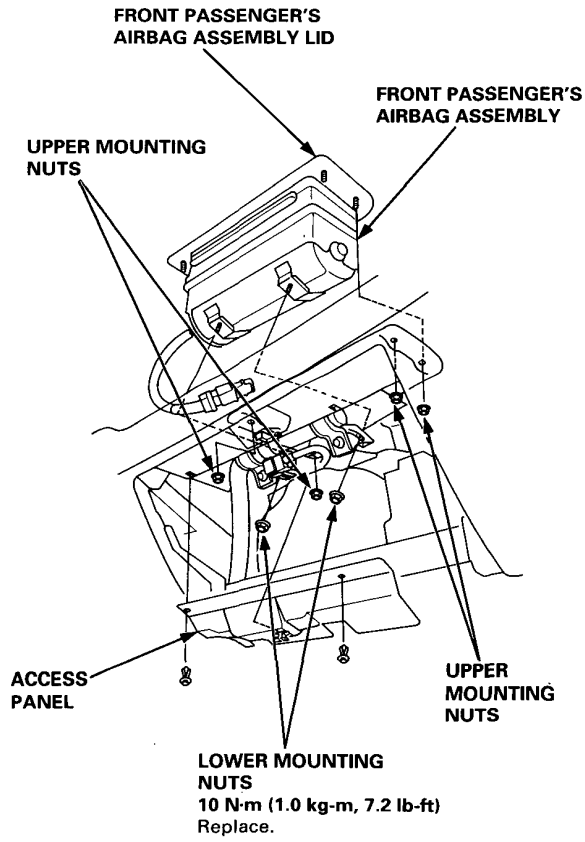
- Place the driver's airbag assembly in the steering wheel, and secure it with new Torx bolts.



Front Passenger's Side:

- Place the front passenger's airbag assembly into the dashboard.
- Loosely install all six mounting nuts.
- Tighten the upper four nuts first, then tighten the lower two nuts. The lower mounting brackets can be adjusted, if necessary.

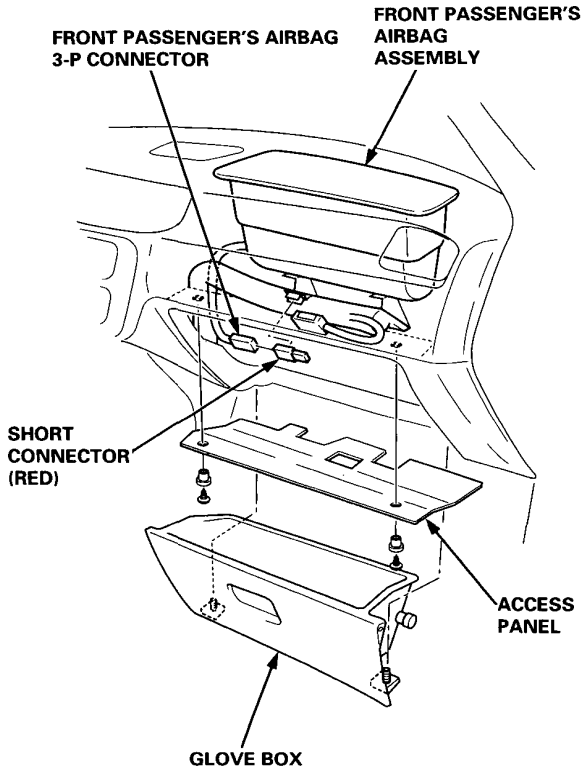
NOTE: If there is some space between the airbag assembly lid and the dashboard after tightening the nuts, loosen the lower mounting nuts, and lightly press down the airbag assembly. Then retighten the lower mounting nuts.



5. Remove and properly store the short connectors, then reconnect the airbag connectors.

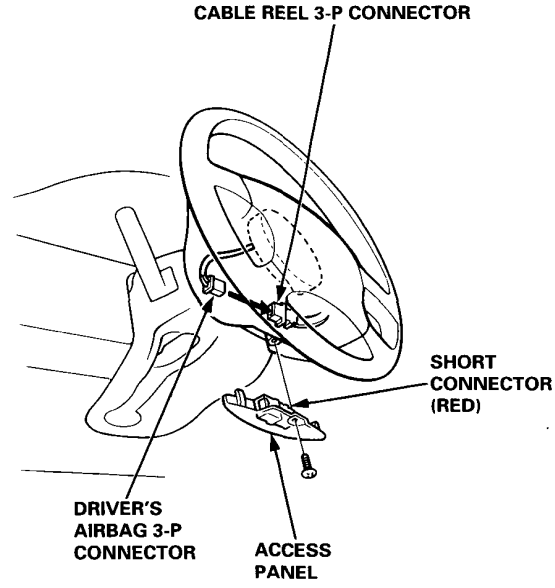
Front Passenger's Side:

- Attach the short connector (RED) to the connector holder.
- Then reinstall the access panel and glove box on the dashboard.



Driver's Side:

- Remove the short connector (RED) from the driver's airbag connector, then connect the airbag 3-P connector to the cable reel 3-P connector.



- Attach the short connector (RED) to the access panel, then reinstall the panel on the steering wheel.

6. Connect the battery positive cable, then the negative cable.

7. After installing the airbag assembly, confirm proper system operation:
   - Turn the ignition ON (II): The instrument panel SRS indicator light should come on for about six seconds and then go off.
   - Make sure both horn buttons work.
   - Take a test drive and make sure the cruise control switches work.

Airbag Assembly

Disposal

Before scrapping any airbags (including those in a whole car to be scrapped) the airbags must be deployed. If the car is still within the warranty period, before you deploy the airbags the Honda District Service Manager must give approval and/or special instructions. Only after the airbags have been deployed (as the result of vehicle collision, for example), can they be scrapped. If the airbags appear intact (not deployed) treat them with extreme caution.
Follow this procedure:

Deploying the Airbags: In-car

NOTE: If an SRS car is to be entirely scrapped, its airbags should be deployed while still in the car. The airbags should not be considered as salvageable parts and should never be installed in another car.

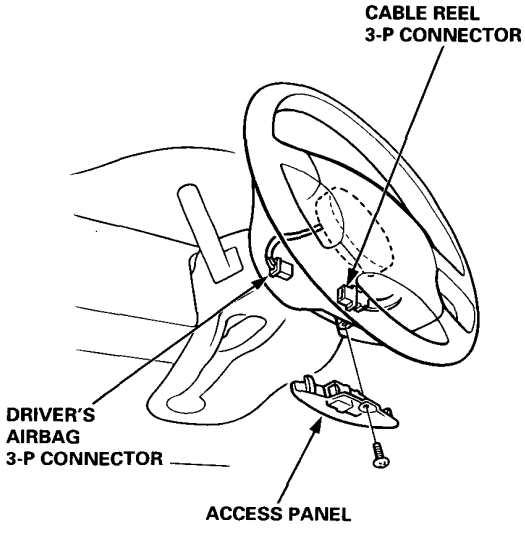
⚠ WARNING Confirm that the airbag assemblies are securely mounted; otherwise, severe personal injury could result from deployment.

1. Disconnect the battery negative cable, then disconnect the positive cable and wait at least three minutes.

2. Confirm that the special tool is functioning properly by following the check procedure on the tool box label, or on page 23-61.

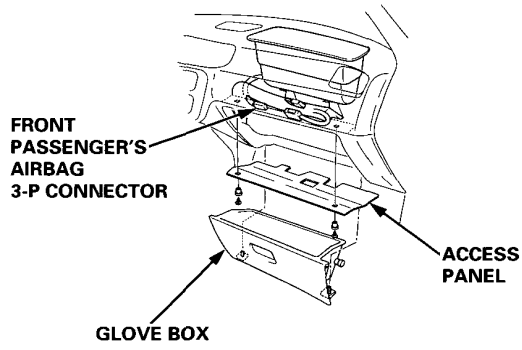
Driver's Airbag:

3. Remove the access panel, then disconnect the 3-P connector between the driver's airbag and the cable reel.

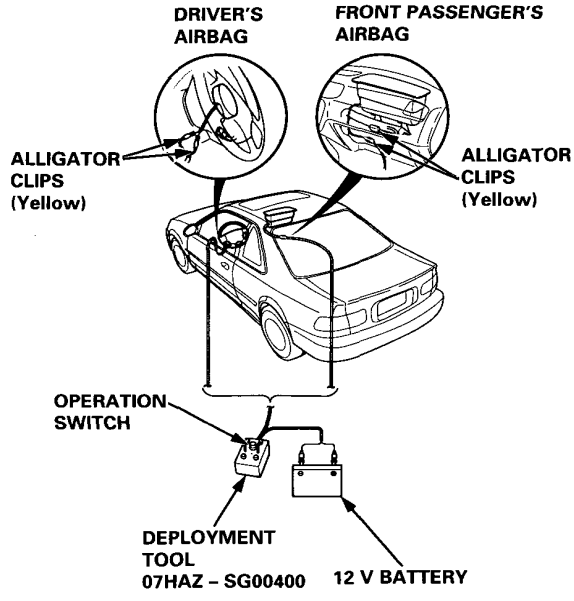


Front Passenger's Airbag:

4. Remove the glove box and access panel, then disconnect the 3-P connector between the front passenger's airbag and SRS main harness.



5. Cut off the airbag connector, strip the ends of the airbag wires, and connect the special tool alligator clips to the airbag. Place the special tool about 10 meters (thirty feet) away from the airbag.



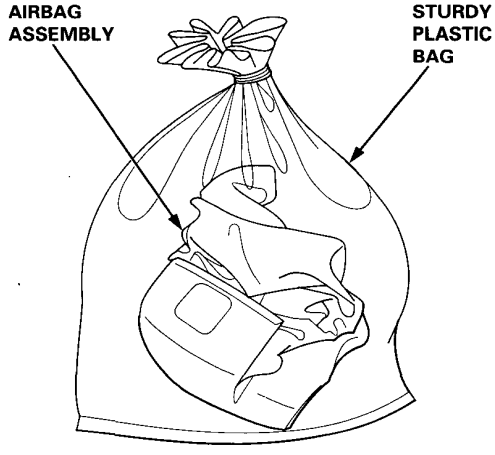
6. Connect a 12 volt battery to the tool:
   - If the green light on the tool comes on, the airbag igniter circuit is defective and cannot deploy the airbag. Go to Damaged Airbag Special Procedure.
   - If the red light on the tool comes on, the airbag is ready to be deployed.

7. Push the tool's deployment switch. The airbag should deploy (deployment is both highly audible and visible a loud noise and rapid inflation of the bag, followed by slow deflation).
   - If audible/visible deployment happens and the green light on the tool comes on, continue with this procedure.
   - If the airbags don't deploy, yet the green light comes on, the igniters are defective. Go to Damaged Airbag Special Procedure.

⚠ WARNING During deployment, the airbag assembly can become hot enough to burn you. Wait thirty minutes after deployment before touching the assembly.

8. Dispose of the complete airbag assembly. No part of it can be reused. Place it in a sturdy plastic bag and seal it securely.

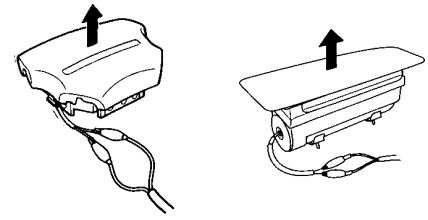
CAUTION:
- **Wear a face shield and gloves when handling a deployed airbag.**
- **Wash your hands and rinse them well with water after handling a deployed airbag.**



Deploying the Airbag: Out-of-car

NOTE: If an intact airbag assembly has been removed from a scrapped car or has been found defective or damaged during transit, storage or service, it should be deployed as follows:

⚠ WARNING Position the airbag assembly face up, outdoors on flat ground, at least 10 meters (thirty feet) from any obstacles or people.



1. Confirm that the special tool is functioning properly by following the check procedure on this page or on the tool box label.
2. Remove the short connector from the airbag connector.
3. Follow steps 5, 6, 7, and 8 of the in-car deployment procedure.

Damaged Airbag Special Procedure

⚠ WARNING If an airbag cannot be deployed, it should not be treated as normal scrap; it should still be considered *a potentially explosive device that can cause* serious injury.

1. If installed in a car, follow the removal procedure on page 23-56.
2. In all cases, make sure a short connector is properly installed on the airbag connector.
3. Package the airbag in exactly the same packaging that the new replacement part came in.
4. Mark the outside of the box "DAMAGED AIRBAG NOT DEPLOYED" so it does not get confused with your parts stock.
5. Contact your Honda District Service Manager for how and where to return it for disposal.

Deployment Tool: Check Procedure

1. Connect the yellow clips to both switch protector handles on the tool; connect the tool to a battery.
2. Push the operation switch: green means the tool is OK; red means the tool is faulty.
3. Disconnect the battery and the yellow clips.

Cable Reel

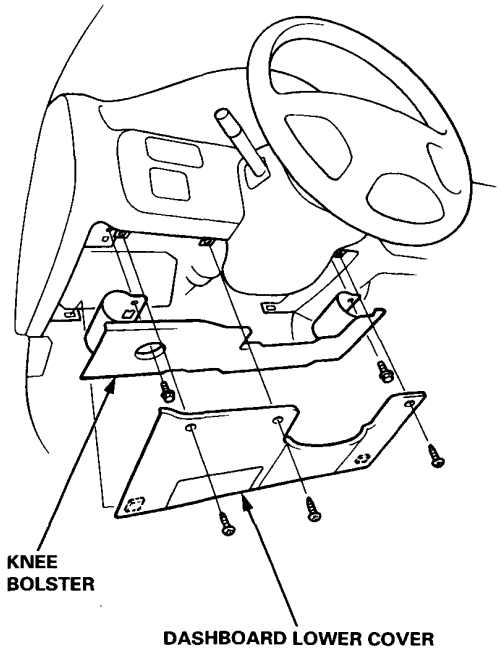
Replacement

⚠ WARNING Store a removed airbag assembly with the pad surface up. If the airbag is improperly stored face down, accidental deployment could propel the unit with enough force to cause serious injury.

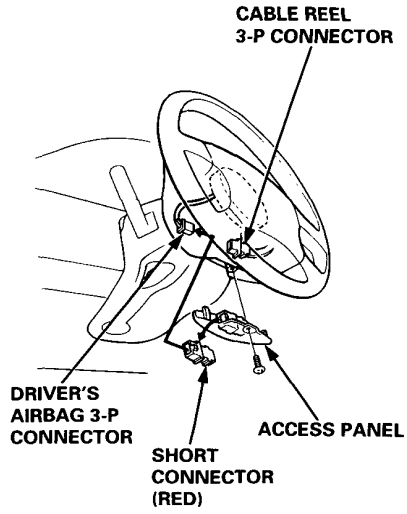
CAUTION:

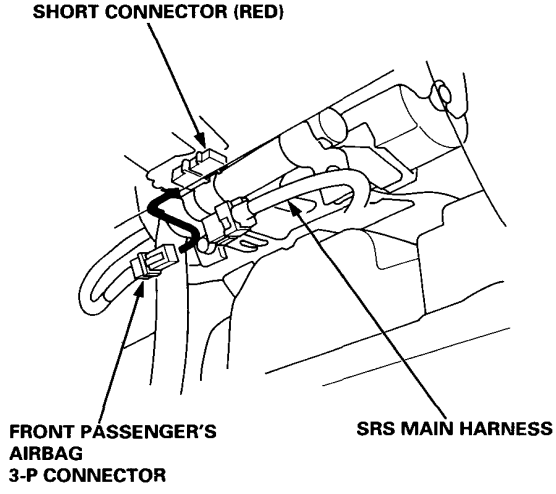
- **Carefully inspect the airbag assembly before installing it. Do not install an airbag assembly that shows signs of being dropped or improperly handled, such as dents, cracks or deformation.**
- **Always keep the short connectors on the airbags connector when the harness is disconnected.**
- **Do not disassemble or tamper with the airbag assembly.**

1. Disconnect the battery negative cable, then disconnect the positive cable and wait at least three minutes.
2. Make sure the wheels are aligned straight ahead.
3. Remove the dashboard lower cover and knee bolster.

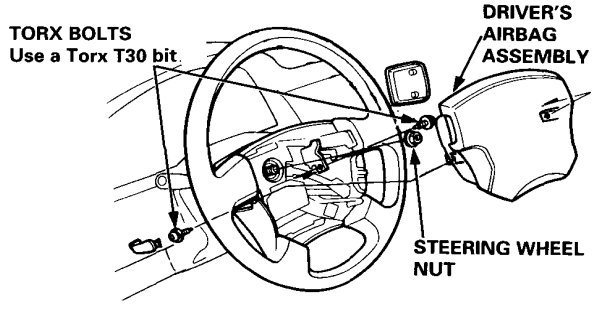


4. Connect the short connectors to the airbags (see page 23-25).

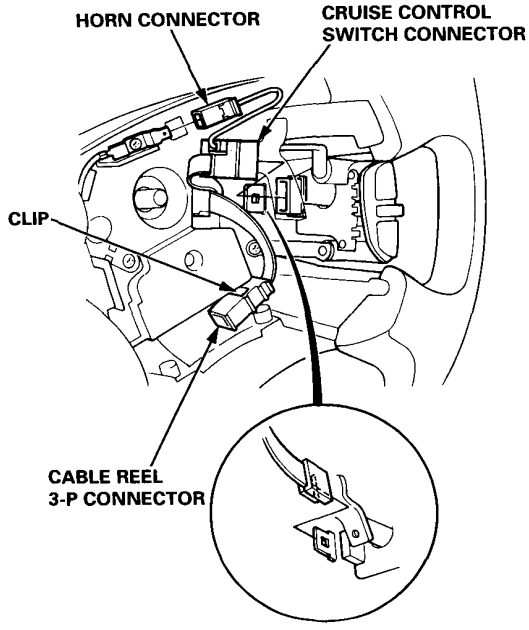




5. Remove the driver's airbag assembly from the steering wheel (two T30 Torx bolts), then remove the steering wheel nut.

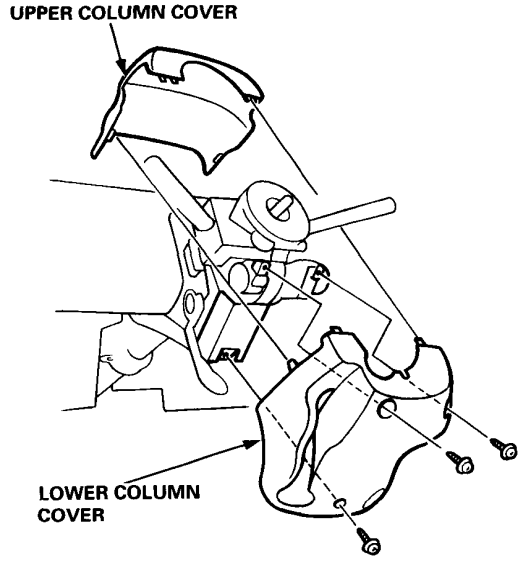


6. Disconnect the connectors from the horn and cruise control switches, then remove the cable reel 3-P connector from it's clip.

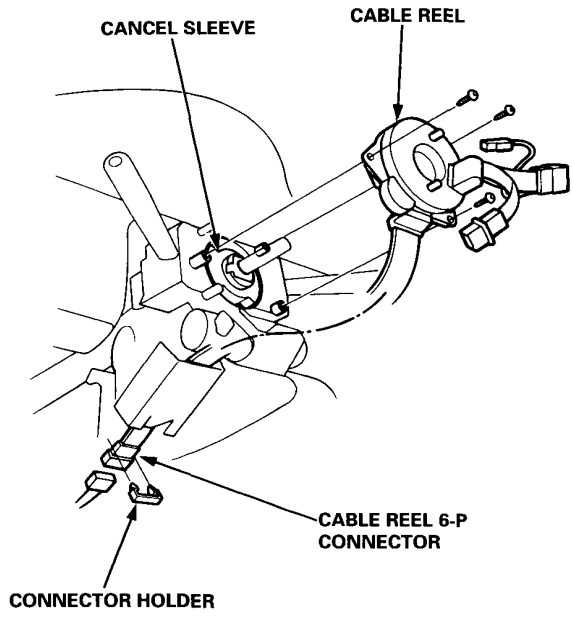


7. Remove the steering wheel from the column.

8. Remove the upper and lower column covers.



9. Disconnect the 6-P connector between the cable reel and SRS main harness, then remove the connector holder from the steering column.



10. Remove the cable reel from the column.

(cont'd)

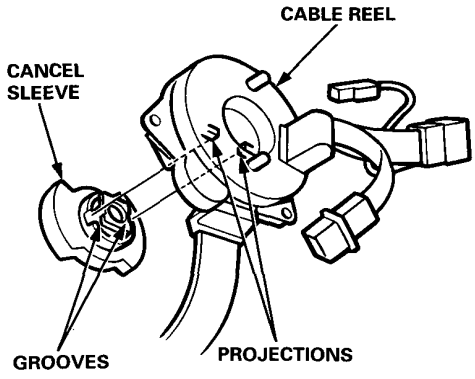
Cable Reel

Replacement (cont'd)

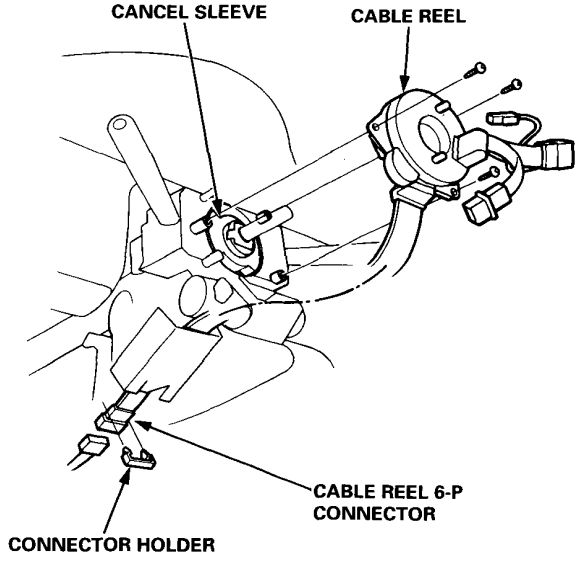
CAUTION:

- **Before installing the steering wheel, the front wheels should be aligned straight ahead.**
- **Be sure to install the harness wires so that they are not pinched or interfering with other car parts.**
- **After reassembly, confirm that the wheels are still turned straight ahead and that steering wheel spoke angle is correct (road test). If minor spoke angle adjustment is necessary, do so only by adjustment of the tie-rods, not by removing and repositioning the steering wheel.**

11. Align the cancel sleeve grooves with the cable reel projections.



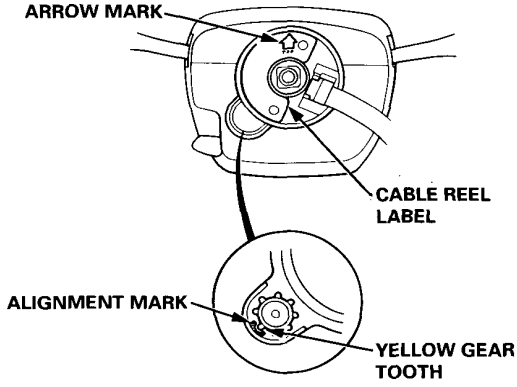
12. Carefully install the cable reel on the steering column shaft. Then attach the connector holder to the steering column.



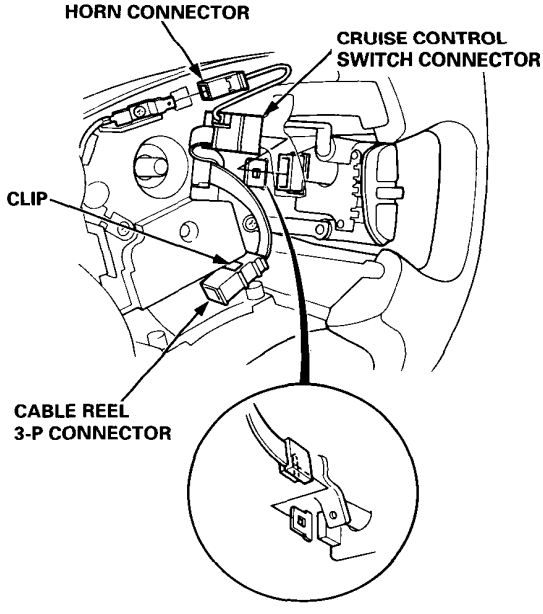
13. Install the steering column upper and lower covers.

14. Center the cable reel.
    Do this by first rotating the cable reel clockwise until it stops.
    Then rotate it counterclockwise (approximately two turns) until:

    - The yellow gear tooth lines up with the alignment mark on the cover.
    - The arrow mark on the cable reel label points straight up.

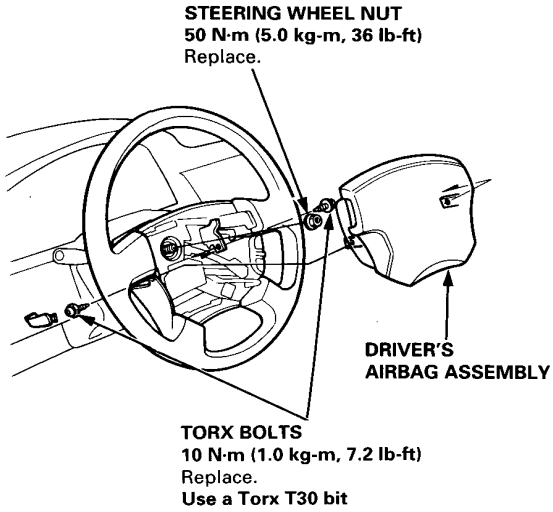


15. Install the steering wheel and attach the cable reel 3-P connector to the clip.



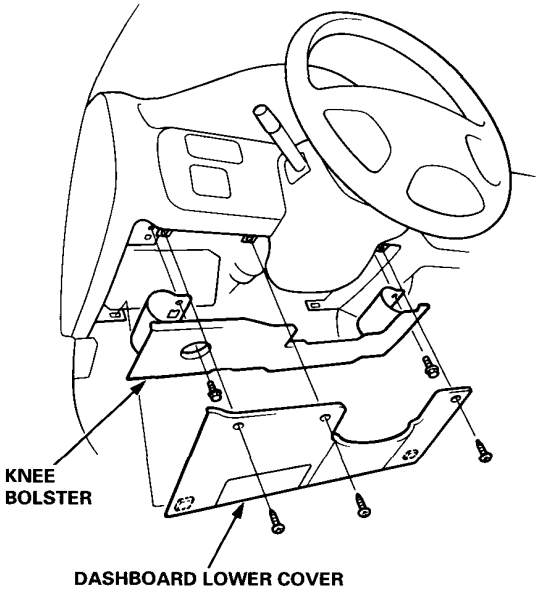
16. Connect the horn connector and cruise control switches connector.

17. Install the steering wheel nut.



18. Install the driver's airbag assembly.

19. Connect the cable reel 6-P connector to the SRS main harness, then install the knee bolster and dashboard lower cover.

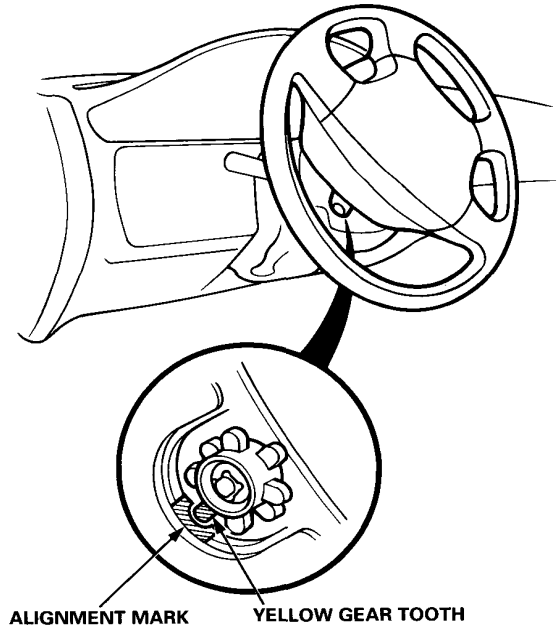


20. Remove and properly store the short connectors (RED), then reconnect the airbag connectors (and reinstall the glove box).

21. Reconnect the battery positive cable, then the negative cable.

22. After installing the cable reel, confirm proper system operation:

- Turn the ignition ON (II); the instrument panel SRS indicator light should come on for about six seconds and then go off.
- Make sure both horn buttons work.
- Make sure the headlight and wiper switches work.
- Go for a test drive and make sure the cruise control switches work.
- Rotate the steering wheel counterclockwise to make sure the yellow gear tooth lines up with the slot on the cover.



SRS Unit

Replacement

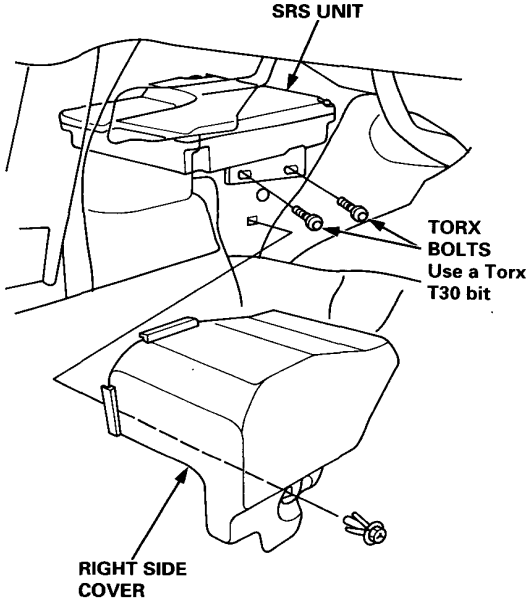
CAUTION:

- **Before disconnecting any part of the SRS wire harness, install the short connectors (RED) on the airbags.**
- **During installation or replacement, do not bump (impact wrench, hammer etc.) the area near the SRS unit.**
- **Do not damage the SRS unit terminals or connectors.**
- **Do not disassemble the SRS unit; it has no serviceable parts.**
- **Store the SRS unit in a clean, dry area.**
- **Do not use any SRS unit which has been subjected to water damage or shows signs of being dropped or improperly handled, such as dents, cracks or deformation.**

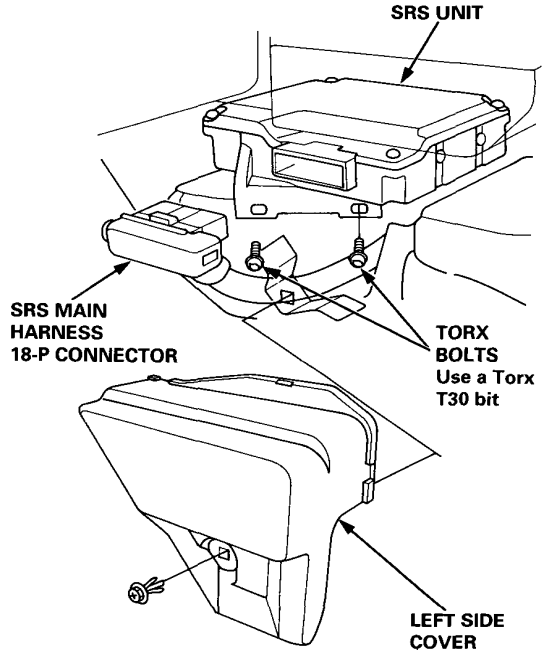
1. Disconnect the battery negative cable, then disconnect the positive cable and wait at least three minutes.

2. Connect the short connectors to the airbags (see page 23-25).

3. Remove the right side cover from the SRS unit.



4. Remove the left side cover from the SRS unit, then disconnect the SRS main harness 18-P connector from the SRS unit.

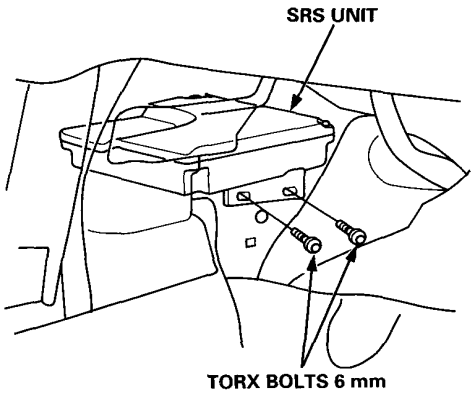


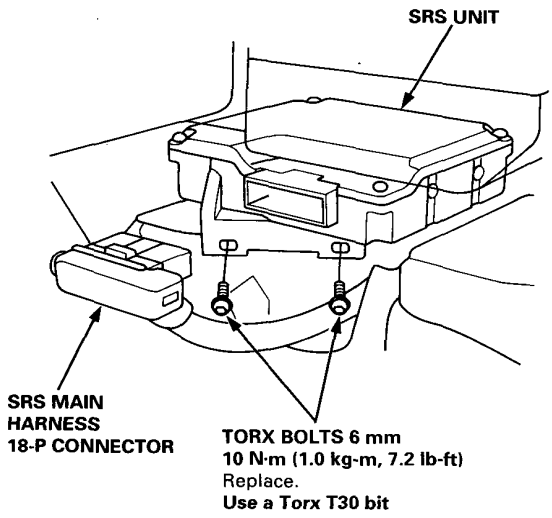
5. Remove the four Torx bolts from the SRS unit, then pull out the SRS unit from the driver's side.

CAUTION:

- **Be sure to install the SRS wiring so that it is not pinched or interfering with other car parts.**
- **When tightening the Torx bolts to the specified torque after replacement, be careful to turn them in so that their heads rest squarely on the brackets.**

6. Install the new SRS unit.





7. Connect the SRS main harness 18-P connector to the SRS unit; push it into position until it clicks.

8. Install the SRS unit covers (right and left).

   NOTE: Make sure the covers snap together in the middle.

9. Remove and properly store the short connectors (RED), then reconnect the airbag connectors (and reinstall the access panel and glove box).

10. Reconnect the battery positive cable, then the negative cable.

11. After installing the SRS unit, confirm proper system operation: Turn the ignition to ON (II); the instrument panel SRS indicator light should come on for about six seconds and then go off.